GREER
allergy immunotherapy

Human Allergy Products and Services

Effective April 2014

Contents

Ordering Information

To set up a new account with GREER®, please contact a Customer Care Specialist.
800.378.3906 or 828.754.5327

Ordering

For the best possible service, specify account number, item number, product name, vial size and dilution, aqueous or glycerinated formulation, and scratch or multiple dose vial, as shown in the catalog.

Certain extracts and mixtures cannot be supplied in the 1:10 w/v strength due to excessive precipitation. These will be supplied at the strongest possible w/v strength. Glycerinated extracts can be supplied in 1:20 w/v or weaker dilutions. Extracts ordered in protein nitrogen units (PNU) are available in aqueous formulations only.

Physician license must be on file. Proper identification will be required from institutions.

Minimum Order

A minimum order of $25.00 is required. Please combine orders to achieve minimum.

Made-to-Order Items

Specific non-stocked products have been identified as made-to-order items based on low utilization. Delivery will be a minimum of 4 to 6 weeks. Please consult your Customer Care Specialist for more information.

Premium Allergens

Specific products have been designated as premium allergens due to low utilization, decreased availability of raw materials, increased costs associated with the collection/extraction process, and/or market conditions. These items carry a surcharge. Please consult your Customer Care Specialist for more information.

Shipping

All extracts are shipped overnight for next-day delivery. All other products ship via UPS 3 Day Select® or Ground unless otherwise specified. Shipments with ice packs are available upon customer request, with an additional charge.

Terms

Net 30 days from date of invoice. FOB Lenoir, NC. Shipping and insurance charges are prepaid and added to the invoice. All prices are in US dollars. All prices are subject to change without notice. We accept payment via MasterCard®, Visa®, and American Express®.

Returns

Please contact a GREER® Customer Care Specialist at 800.378.3906 for *prior approval* of all product returns. Any shipping error must be reported within 7 days of receipt of the order. A Return Goods Authorization Number must accompany all product returns to GREER within 10 days of the return notification.

Allergenic extracts and sterile products cannot be returned unless due to a GREER error. Ancillary supplies must be returned in unopened, undamaged cases. Credit is not issued for duplications resulting from customer errors in ordering.

Warranty

We warrant only that solutions in unopened and undamaged vials are sterile and correctly labeled. Once shipment is made, we have no control over storage conditions, methods of usage, or dosage administered.

Telephone and Fax Orders

To order by telephone, call our Customer Care Specialists: **800.378.3906**

To order by fax, dial: **800.419.7302** or **828.754.5320**

For customers outside the United States, call: **828.754.5327**

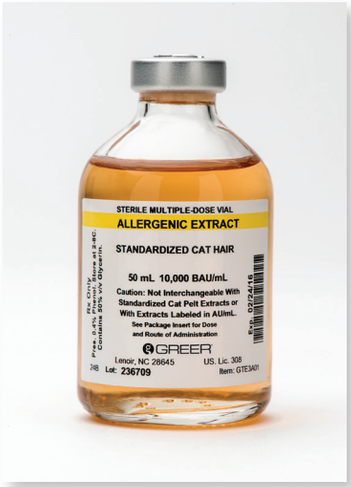
To email, write to: **customercare@greerlabs.com**

Our Customer Care Specialists are available Monday through Thursday 8 AM to 7 PM and Friday 8 AM to 5 PM Eastern Time.

For information on custom mixtures, please contact a GREER® Customer Care Specialist at 800.378.3906.

Standardized Extracts

All standardized products are available in 50% glycerin only.



Item #	Product Name	Testing 5mL Scratch	Treatment Glycerin
Standardized Cat Hair			
TE3	**Standardized Cat Hair** *Felis catus (domesticus)*	●	●
Standardized Mites			
B64	***Dermatophagoides farinae***	●	●
B70	***Dermatophagoides pteronyssinus***	●	●
Standardized Mite Mix			
B03	**Mite Mix, Standardized** **Equal parts of:** B64 *D. farinae*, B70 *D. pteronyssinus*	●	●
Standardized Grass Pollen			
T2	**Bermuda** *Cynodon dactylon*	●	●
T16	**Kentucky Blue/June** *Poa pratensis*	●	●
T14	**Meadow Fescue** *Festuca elatior (pratensis)*	●	●
T20	**Orchard** *Dactylis glomerata*	●	●
T22	**Red Top** *Agrostis (alba) gigantea*	●	●
T24	**Ryegrass, Perennial** *Lolium perenne*	●	●
T27	**Sweet Vernal*** *Anthoxanthum odoratum*	●	●
T28	**Timothy** *Phleum pratense*	●	●
Mixes Containing Standardized Grass Pollen			
TP20	**Timothy/Orchard Grass Mix** 28 Timothy, 20 Orchard Grass	●	●
TP23	**K-O-T Grass Mix** 16 Kentucky Blue/June, 20 Orchard, 28 Timothy	●	●
TP24	**K-O-R-T Grass Mix** 16 Kentucky Blue/June, 20 Orchard, 22 Redtop, 28 Timothy	●	●
TP25	**K-O-R-T and Sweet Vernal Mix** 16 Kentucky Blue/June, 20 Orchard, 22 Redtop, 28 Timothy, 27 Sweet Vernal	●	●
TP29	**T-O-S Grass Mix** 28 Timothy, 20 Orchard, 27 Sweet Vernal	●	●
TP27	**7 Grass Mix** 16 Kentucky Blue/June, 14 Meadow Fescue, 20 Orchard, 24 Perennial Ryegrass, 22 Redtop, 27 Sweet Vernal, 28 Timothy	●	●
P19	**9 Southern Grass Mix (Concentrate)** Equal parts of: 2 Bermuda at 10,000 BAU/mL, P27 7 Grass Mix at 100,000 BAU/mL, 15 Johnson at 1:20 w/v	●	●

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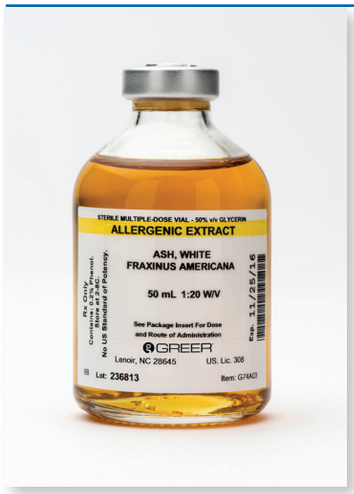
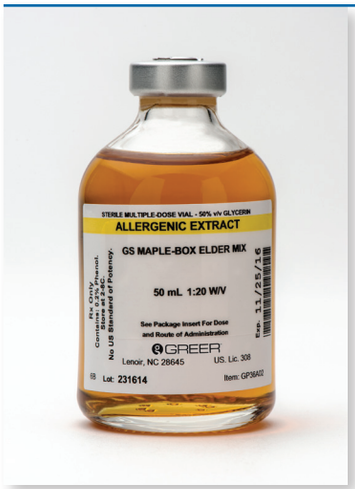
Item #	Product Name	Testing 5mL Scratch	Treatment Glycerin
Standardized Weed Pollen			
56	**Ragweed, Short** *Ambrosia artemisiifolia*	●	●
Mixes Containing Standardized Weed Pollen			
P3	**National Weed Mix** 33 Cocklebur, 55 Giant Ragweed, 43 Lamb's Quarter, 52 Rough/Redroot Pigweed, 56 Short Ragweed	●	●
P1	**Ragweed Mix** 55 Giant, 56 Short	●	●

Pollen



Item #	Product Name	Testing ID 5 mL	Testing Scratch 5 mL	Treatment Glycerin	Treatment Aqueous
Trees and Shrubs					
172	**Acacia*** *Acacia* spp.	●	●	●	●
217	**Alder, Red** *Alnus rubra*	●	●	●	●
69	**Alder, Hazel** *Alnus serrulata*	●	●	●	●
438	**Alder, White** *Alnus rhombifolia*	●	●	●	●
204	**Ash, Arizona*** *Fraxinus velutina*	●	●	●	●
73	**Ash, Oregon** *Fraxinus latifolia*	●	●	●	●
72	**Ash, Red/Green** *Fraxinus pennsylvanica*	●	●	●	●
74	**Ash, White** *Fraxinus americana*	●	●	●	●
75	**Aspen*** *Populus tremuloides*	●	●	●	●
173	**Bayberry/Wax Myrtle*** *Morella cerifera*	●	●	●	●
76	**Beech, American*** *Fagus grandifolia*		●	●	
207	**Beefwood/Australian Pine*** *Casuarina equisetifolia*	●	●	●	●
81	**Birch, Black/Sweet** *Betula lenta*	●	●	●	●
79	**Birch, River** *Betula nigra*	●	●	●	●
426	**Birch, Spring** *Betula occidentalis*	●	●	●	●
80	**Birch, White** *Betula populifolia*	●	●	●	●
82	**Box Elder** *Acer negundo*	●	●	●	
83	**Cedar, Mountain** *Juniperus ashei*	●	●	●	
84	**Cedar, Red** *Juniperus virginiana*	●	●	●	●
242	**Cedar, Salt/Tamarisk*** *Tamarix gallica*	●	●	●	
444	**Cottonwood, Black** *Populus balsamifera* ssp. *trichocarpa*	●	●	●	●

Pollen



Item #	Product Name	Testing		Treatment	
		ID 5 mL	Scratch 5 mL	Glycerin	Aqueous
Trees and Shrubs *Continued*					
87	**Cottonwood, Eastern** *Populus deltoides*	●	●	●	
255	**Cottonwood, Fremont*** *Populus fremontii*	●	●	●	●
88	**Cottonwood, Western*** *Populus deltoides* ssp. *monilifera*	●	●	●	
244	**Cypress, Arizona** *Cupressus arizonica*	●	●	●	●
193	**Cypress, Bald*** *Taxodium distichum*	●	●	●	●
92	**Elm, American** *Ulmus americana*	●	●	●	
179	**Elm, Cedar/Fall Blooming*** *Ulmus crassifolia*	●	●	●	●
93	**Elm, Siberian*** *Ulmus pumila*	●	●	●	●
196	**Eucalyptus*** *Eucalyptus globulus*	●	●	●	●
98	**Hackberry*** *Celtis occidentalis*	●	●	●	●
99	**Hazelnut, American*** *Corylus americana*	●	●	●	●
103	**Hickory, Shagbark*** *Carya ovata*	●	●	●	●
102	**Hickory, Shellbark*** *Carya laciniosa*	●	●	●	●
104	**Hickory, White** *Carya alba*	●	●	●	
243	**Juniper, Oneseed** *Juniperus monosperma*	●	●	●	●
275	**Juniper, Pinchot** *Juniperus pinchotii*	●	●	●	●
280	**Juniper, Rocky Mountain** *Juniperus scopulorum*	●	●	●	●
233	**Juniper, Utah** *Juniperus osteosperma*	●	●	●	●
254	**Juniper, Western** *Juniperus occidentalis*	●	●	●	●
169	**Locust Blossom, Black*** *Robinia pseudoacacia*	●	●	●	●
257	**Mango Blossom*** *Mangifera indica*	●	●	●	●
108	**Maple, Red** *Acer rubrum*	●	●	●	●
109	**Maple, Soft/Silver** *Acer saccharinum*	●	●	●	●
110	**Maple, Sugar/Hard*** *Acer saccharum*	●	●	●	
221	**Melaleuca*** *Melaleuca quinquenervia*	●	●	●	●
111	**Mesquite*** *Prosopis velutina*	●	●	●	
113	**Mulberry, Paper*** *Broussonetia papyrifera*	●	●	●	●
112	**Mulberry, Red** *Morus rubra*	●	●	●	
194	**Mulberry, White** *Morus alba*	●	●	●	●
256	**Oak, Arizona/Gambel*** *Quercus gambelii*	●	●	●	●
114	**Oak, Black** *Quercus velutina*		●	●	●
115	**Oak, Bur** *Quercus macrocarpa*	●	●	●	●

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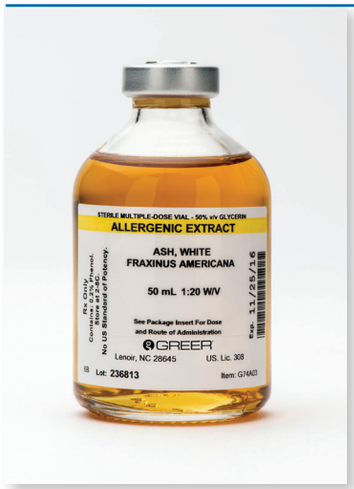
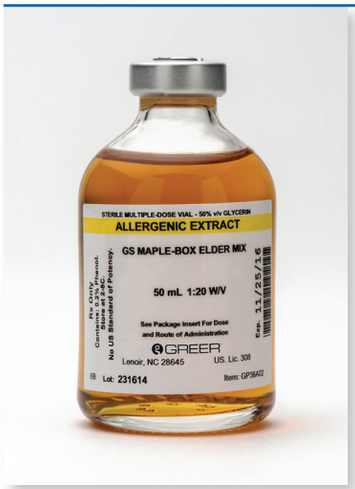


Item #	Product Name	Testing		Treatment	
		ID 5 mL	Scratch 5 mL	Glycerin	Aqueous
Trees and Shrubs *Continued*					
284	**Oak, California Black** *Quercus kelloggii*	●	●	●	●
195	**Oak, California Live** *Quercus agrifolia*	●	●	●	●
455	**Oak, California White** *Quercus lobata*	●	●	●	●
119	**Oak, Post** *Quercus stellata*		●	●	●
120	**Oak, Red** *Quercus rubra*	●	●	●	●
116	**Oak, Virginia Live** *Quercus virginiana*	●	●	●	●
198	**Oak, Water** *Quercus nigra*	●	●	●	●
285	**Oak, Western White** *Quercus garryana*	●	●	●	●
122	**Oak, White** *Quercus alba*	●	●	●	●
123	**Olive** *Olea europaea*	●	●	●	●
479	**Olive, Russian*** *Elaeagnus angustifolia*	●	●	●	●
247	**Orange Pollen*** *Citrus sinensis*	●	●	●	●
216	**Palm, Queen** *Arecastrum romanzoffianum*	●	●	●	●
127	**Pecan** *Carya illinoinensis*	●	●	●	●
258	**Pepper Tree*** *Schinus* spp.	●	●	●	●
132	**Pine, Loblolly** *Pinus taeda*	●	●	●	●
129	**Pine, Longleaf** *Pinus palustris*	●	●	●	●
478	**Pine, Ponderosa** *Pinus ponderosa*	●	●	●	●
171	**Pine, Virginia Scrub** *Pinus virginiana*	●	●	●	●
130	**Pine, White/Eastern** *Pinus strobus*	●	●	●	●
480	**Pine, White/Western** *Pinus monticola*	●	●	●	●
131	**Pine, Yellow** *Pinus echinata*	●	●	●	●
177	**Poplar, Lombardy** *Populus nigra*	●	●	●	●
134	**Poplar, White** *Populus alba*	●	●	●	●
135	**Privet, Common*** *Ligustrum vulgare*	●	●	●	●
137	**Sweet Gum** *Liquidambar styraciflua*	●	●	●	●
138	**Sycamore, American/Eastern** *Platanus occidentalis*	●	●	●	●
228	**Sycamore, Western*** *Platanus racemosa*	●	●	●	●
140	**Walnut, Black** *Juglans nigra*	●	●	●	●
222	**Walnut, California Black** *Juglans californica*	●	●	●	●
210	**Walnut, English** *Juglans regia*	●	●	●	●
483	**Willow, Arroyo*** *Salix lasiolepis*	●	●	●	●
142	**Willow, Black*** *Salix nigra*	●	●	●	

Pollen



Tree Mixes

Item #	Product Name	Testing: ID 5 mL	Testing: Scratch 5 mL	Treatment: Glycerin	Treatment: Aqueous
P30	**Ash Mix** 72 Red/Green, 74 White	●	●	●	
P31	**Birch Mix** 81 Black/Sweet, 79 River,80 White	●	●	●	●
P32	**Elm Mix** 92 American, 93 Siberian	●	●	●	
P33	**Hickory Mix** 101 Pignut, 103 Shagbark, 102 Shellbark, 104 White	●	●	●	●
P34	**Hickory–Pecan Mix** 127 Pecan, 103 Shagbark Hickory	●	●	●	●
P0800	**Juniper Mix** 243 Oneseed, 280 Rocky Mountain	●	●	●	●
P35	**2 Maple Mix** 108 Red, 110 Sugar/Hard	●	●	●	
P53	**3 Maple Mix** 108 Red, 109 Soft/Silver, 110 Sugar/Hard	●	●	●	
P36	**Maple–Box Elder Mix** 82 Box Elder, 110 Sugar/Hard Maple	●	●	●	
P37	**Pine Mix** 132 Loblolly, 130 White/Eastern, 131 Yellow	●	●	●	●
P38	**Eastern Oak Mix** 114 Black, 120 Red, 122 White	●	●	●	●
P46	**Eastern 6 Tree Mix** 76 American Beech, 87 Eastern Cottonwood, 120 Red Oak, 79 River Birch, 103 Shagbark Hickory, 74 White Ash	●	●	●	●
P47	**Eastern 7 Tree Mix** 92 American Elm, P46 Eastern 6 Tree Mix	●	●	●	●
P48	**Eastern 8 Tree Mix** 92 American Elm, P46 Eastern 6 Tree Mix, 110 Maple Sugar/Hard	●	●	●	
P50	**Eastern 10 Tree Mix** 138 American/Eastern Sycamore, 92 American Elm, P46 Eastern 6 Tree Mix, 110 Sugar/Hard Maple, 137 Sweet Gum	●	●	●	
P49	**Central/Eastern 4 Tree Mix** 92 American Elm, 82 Box Elder, 127 Pecan, 116 Virginia Live Oak	●	●	●	●
P41	**Western Oak Mix** 284 California Black, 195 California Live, 285 Western White	●	●	●	●
P56	**Western 3 Tree Mix** 93 Siberian Elm, 228 Western Sycamore, 123 Olive	●	●	●	
P39	**Western 10 Tree Mix** 172 Acacia, 82 Box Elder, 255 Fremont Cottonwood, 123 Olive, 93 Siberian Elm, 426 Spring Birch, 254 Western Juniper, 228 Western Sycamore, 285 Western White Oak, 194 White Mulberry	●	●	●	●
P51	**Western Walnut Mix** 222 California Black, 210 English	●	●	●	●
P0714	**11 Tree Mix** 76 American Beech, 138 American/Eastern Sycamore, 92 American Elm, 140 Black Walnut, 142 Black Willow, 87 Eastern Cottonwood, 120 Red Oak, 79 River Birch, 103 Shagbark Hickory, 110 Sugar/Hard Maple, 74 White Ash	●	●	●	●
P03621	**Southern CA Tree Mix D** 172 Acacia, 82 Box Elder, 222 California Black Walnut, P32 Elm Mix, 255 Fremont Cottonwood, 111 Mesquite, 123 Olive, 426 Spring Birch, P41 Western Oak Mix, 228 Western Sycamore, 194 White Mulberry		●	●	

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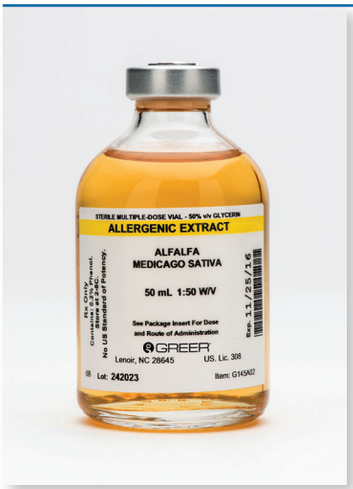
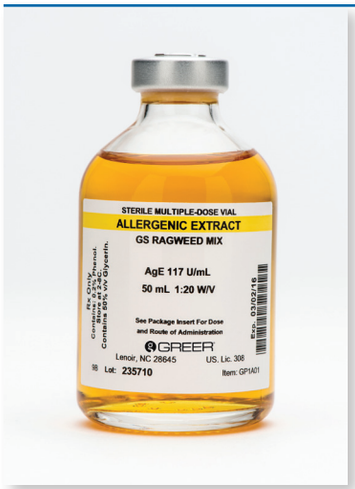


Item #	Product Name	Testing		Treatment	
		ID 5 mL	Scratch 5 mL	Glycerin	Aqueous
Flowers					
158	**Daisy, Ox-Eye*** *Leucanthemum vulgare*		●	●	●
159	**Dandelion** *Taraxacum officinale*	●	●	●	●
164	**Sunflower** *Helianthus annuus*	●	●	●	●
Cultivated Plants					
145	**Alfalfa*** *Medicago sativa*	●	●	●	●
174	**Mustard*** *Brassica* spp.	●	●	●	●
146	**Red Clover*** *Trifolium pratense*	●	●	●	●
63	**Sugar Beet** *Beta vulgaris*	●	●	●	●
Weeds					
202	**Allscale*** *Atriplex polycarpa*	●	●	●	●
225	**Baccharis*** *Baccharis* spp.	●	●	●	●
213	**Burrobrush*** *Hymenoclea salsola*	●	●	●	●
32	**Careless Weed, Amaranth/Green** *Amaranthus hybridus*	●	●	●	●
33	**Cocklebur*** *Xanthium strumarium*	●	●	●	
35	**Dock, Yellow/Curly*** *Rumex crispus*	●	●	●	●
184	**Dog Fennel*** *Eupatorium capillifolium*	●	●	●	●
42	**Firebush/Kochia** *Kochia scoparia*	●	●	●	●
37	**Goldenrod*** *Solidago* spp.	●	●	●	●
40	**Hemp, Water*** *Amaranthus rudis*	●	●	●	
212	**Iodine Bush*** *Allenrolfea occidentalis*	●	●	●	●
43	**Lamb's Quarter** *Chenopodium album*	●	●	●	
240	**Lenscale/Quailbrush** *Atriplex lentiformis*	●	●	●	●
44	**Marsh Elder, Burweed/Giant Poverty*** *Iva xanthifolia*	●	●	●	
45	**Marsh Elder, True/Rough** *Iva annua*	●	●	●	
47	**Mugwort, Common*** *Artemisia vulgaris*	●	●	●	
48	**Mugwort, Darkleaved/Sagebrush, Prairie*** *Artemisia ludoviciana*	●	●	●	●
36	**Nettle** *Urtica dioica*	●	●	●	●
49	**Palmer's Amaranth** *Amaranthus palmeri*	●	●	●	●
52	**Pigweed, Rough/Redroot** *Amaranthus retroflexus*	●	●	●	
53	**Pigweed, Spiny*** *Amaranthus spinosus*		●	●	

Pollen



Item #	Product Name	Testing		Treatment	
		ID 5 mL	Scratch 5 mL	Glycerin	Aqueous
Weeds *Continued*					
54	**Plantain, English** *Plantago lanceolata*	●	●	●	●
238	**Rabbit Bush** *Ambrosia deltoidea*	●	●	●	●
272	**Ragweed, Desert** *Ambrosia dumosa*	●	●	●	●
185	**Ragweed, False*** *Ambrosia acanthicarpa*	●	●	●	●
55	**Ragweed, Giant** *Ambrosia trifida*	●	●	●	●
56	**Ragweed, Short** *Ambrosia artemisiifolia*		●	●	
50	**Ragweed, Slender*** *Ambrosia confertiflora*	●	●	●	●
57	**Ragweed, Southern*** *Ambrosia bidentata*	●	●	●	●
58	**Ragweed, Western** *Ambrosia psilostachya*	●	●	●	●
59	**Russian Thistle*** *Salsola kali*	●	●	●	
61	**Sagebrush, Common** *Artemisia tridentata*	●	●	●	●
199	**Saltbush, Annual*** *Atriplex wrightii*	●	●	●	●
64	**Sorrel, Sheep/Red** *Rumex acetosella*	●	●	●	●
206	**Wingscale** *Atriplex canescens*	●	●	●	●
Weed Mixes					
P54	**3 Weed Mix** 33 Cocklebur, 43 Lamb's Quarter, 52 Rough/Redroot Pigweed	●	●	●	●
P14	**Central/Western Weed Mix** 42 Firebush/Kochia, 43 Lamb's Quarter, 59 Russian Thistle	●	●	●	●
P15	**Common Weed Mix** 33 Cocklebur, 54 English Plantain, 43 Lamb's Quarter, 52 Rough/Redroot Pigweed, 59 Russian Thistle	●	●	●	●
PO216	**Dock–Sorrel Mix** 64 Sheep Sorrel, 35 Yellow/Curly Dock	●	●	●	●
P3	**National Weed Mix** 33 Cocklebur, 55 Giant Ragweed, 43 Lamb's Quarter, 52 Rough/Redroot Pigweed, 56 Short Ragweed		●	●	
P5	**Pigweed Mix** 32 Careless Weed/Amaranth Green, 49 Palmer's Amaranth, 52 Rough/Redroot Pigweed	●	●	●	●
P6	**Plantain–Sorrel Mix** 54 English Plantain, 64 Sheep/Red Sorrel	●	●	●	●
P1	**Ragweed Mix** 55 Giant, 56 Short		●	●	
P8	**Sage Mix** 61 Common Sagebrush, 48 Darkleaved Mugwort/Prairie Sagebrush	●	●	●	
P9	**Scale/Atriplex Mix** 202 Allscale, 240 Lenscale/Quailbrush, 206 Wingscale	●	●	●	●

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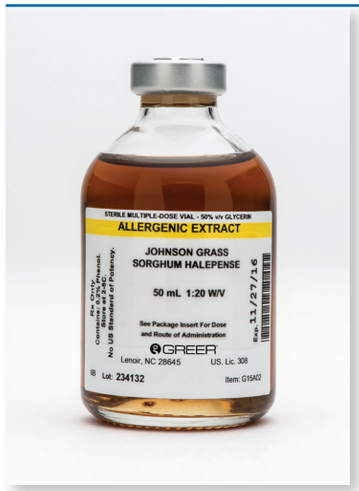

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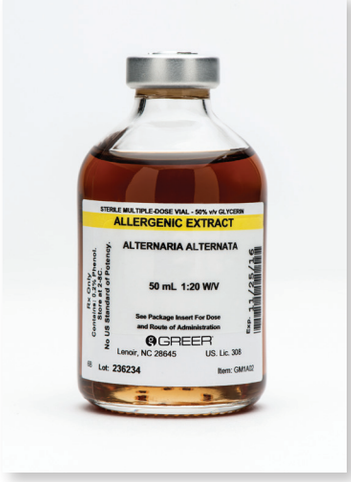
		ID 5 mL	Scratch 5 mL	Glycerin	Aqueous
Weed Mixes *Continued*					
PO3138	**Southern CA Weed Mix B** 32 Careless Weed, Amaranth/Green, P14 Central/Western Weed Mix, 33 Cocklebur, 61 Common Sagebrush, PO216 Dock-Sorrel Mix, 54 English Plantain, P9 Scale/Atriplex Mix, P2 Western Ragweed Mix		●	●	
P2	**Western Ragweed Mix** 185 False, 58 Western	●	●	●	●
Grasses					
231	**Bahia Grass*** *Paspalum notatum*	●	●	●	●
T2	**Bermuda Grass** *Cynodon dactylon*		●	●	
8	**Brome Grass, Smooth*** *Bromus inermis*	●	●	●	●
9	**Canarygrass, Reed** *Phalaris arundinacea*	●	●	●	●
149	**Corn, Cultivated** *Zea mays*	●	●	●	●
11	**Couch/Quack Grass*** *Elymus repens*		●	●	
15	**Johnson Grass** *Sorghum halepense*	●	●	●	
T16	**Kentucky Blue/June** *Poa pratensis*		●	●	
T14	**Meadow Fescue** *Festuca elatior (pratensis)*		●	●	
21	**Oats, Common/Cultivated** *Avena sativa*	●	●	●	●
T20	**Orchard** *Dactylis glomerata*		●	●	
T22	**Redtop** *Agrostis (alba) gigantea*		●	●	
23	**Rye, Cultivated** *Secale cereale*	●	●	●	●
264	**Ryegrass, Giant Wild*** *Leymus condensatus*	●	●	●	●
25	**Ryegrass, Italian*** *Lolium perenne* ssp. *multiflorum*	●	●	●	●
T24	**Ryegrass, Perennial** *Lolium perenne*		●	●	
T27	**Sweet Vernal*** *Anthoxanthum odoratum*		●	●	
T28	**Timothy** *Phleum pratense*		●	●	
29	**Velvetgrass*** *Holcus lanatus*	●	●	●	●
31	**Wheat, Cultivated*** *Triticum aestivum*	●	●	●	●
186	**Wheatgrass, Western*** *Pascopyrum smithii*	●	●	●	●

Pollen

Item #	Product Name	Testing		Treatment	
		ID 5 mL	Scratch 5 mL	Glycerin	Aqueous
Grass Mixes					
TP20	**Timothy/Orchard Grass Mix** 28 Timothy, 20 Orchard Grass		●	●	
TP23	**K–O–T Grass Mix** 16 Kentucky Blue/June, 20 Orchard, 28 Timothy		●	●	
TP24	**K–O–R–T Grass Mix** 16 Kentucky Blue/June, 20 Orchard, 22 Redtop, 28 Timothy		●	●	
TP25	**K–O–R–T and Sweet Vernal Mix** 16 Kentucky Blue/June, 20 Orchard, 22 Redtop, 28 Timothy, 27 Sweet Vernal		●	●	
TP29	**T–O–S Grass Mix** 28 Timothy, 20 Orchard, 27 Sweet Vernal		●	●	
TP27	**7 Grass Mix** 16 Kentucky Blue/June, 14 Meadow Fescue, 20 Orchard, 24 Perennial Ryegrass, 22 Redtop, 27 Sweet Vernal, 28 Timothy		●	●	
P19	**9 Southern Grass Mix (Concentrate)** Equal parts of: 2 Bermuda at 10,000 BAU/mL, P27 7 Grass Mix at 100,000 BAU/mL, 15 Johnson at 1:20 w/v		●	●	

Fungi and Smuts



Item #	Product Name	Testing		Treatment	
		ID 5 mL	Scratch 5 mL	Glycerin	Aqueous
Fungi					
M6	***Acremonium strictum*** *Cephalosporium acremonium*	●	●	●	
M1	***Alternaria alternata*** *Alternaria tenuis*	●	●	●	●
M4	***Aspergillus amstelodami*** *Aspergillus glaucus*	●	●	●	●
M2	***Aspergillus flavus***	●	●	●	●
M3	***Aspergillus fumigatus***	●	●	●	●
M35	***Aspergillus nidulans***	●	●	●	●
M5	***Aspergillus niger***	●	●	●	●
M21	***Aureobasidium pullulans*** *Pullularia pullulans*	●	●	●	
M12	***Bipolaris sorokiniana*** *Helminthosporium sativum*	●	●	●	●
M30	***Botrytis cinerea***	●	●	●	
M15	***Candida albicans***	●	●	●	●
M8	***Chaetomium globosum***	●	●	●	●
M9	***Cladosporium herbarum***	●	●	●	●

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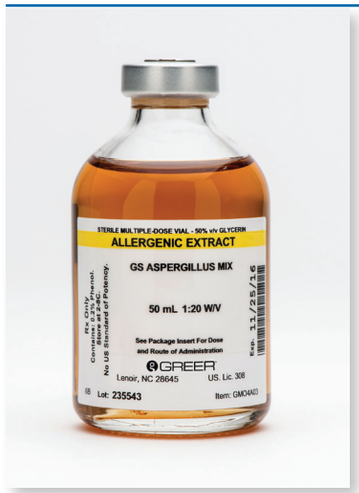
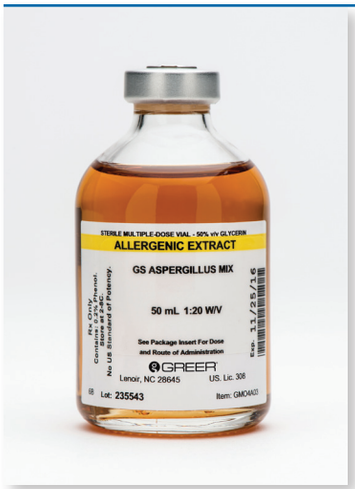
Fungi and Smuts



Item #	Product Name	Testing		Treatment	
		ID 5 mL	Scratch 5 mL	Glycerin	Aqueous
Fungi *Continued*					
M13	***Cladosporium sphaerospermum*** *Hormodendrum hordei*	●	●	●	
M45	***Drechslera spicifera*** *Curvularia spicifera*	●	●	●	●
M29	***Epicoccum nigrum*** *Epicoccum purpurascens*	●	●	●	
M10	***Epidermophyton floccosum***	●	●	●	●
M11	***Fusarium moniliforme***	●	●	●	●
M48	***Fusarium solani***	●	●	●	●
M63	***Geotrichum candidum***	●	●	●	
M41	***Gliocladium viride**** *Gliocladium deliquescens*	●	●	●	●
M40	***Helminthosporium solani*** *Spondylocladium atrovirens*	●	●	●	●
M14	***Microsporum canis****		●	●	
M52	***Mucor circinelloides* f. *circinelloides*** *Mucor mucedo*	●	●	●	●
M68	***Mucor circinelloides* f. *lusitanicus*** *Mucor racemosus*	●	●	●	
M27	***Mucor plumbeus***	●	●	●	●
M44	***Mycogone perniciosa***		●	●	
M16	***Neurospora intermedia*** *Monilia sitophila*	●	●	●	●
M43	***Nigrospora oryzae***		●	●	
M34	***Paecilomyces variotii***	●	●	●	●
M28	***Penicillium digitatum****	●	●	●	●
M19	***Penicillium chrysogenum*** *(notatum)*	●	●	●	●
M39	***Phoma betae***	●	●	●	
M22	***Rhizopus oryzae*** *Rhizopus arrhizus*	●	●	●	●
M23	***Rhizopus stolonifer*** *Rhizopus nigricans*	●	●	●	●
M49	***Rhodotorula mucilaginosa*** *Rhodotorula rubra*	●	●	●	●
M67	***Saccharomyces cerevisiae***	●	●	●	●
M33	***Stemphylium solani***	●	●	●	●
M24	***Trichoderma harzianum**** *Trichoderma viride*	●	●	●	●
M26	***Trichophyton mentagrophytes***	●	●	●	●
M50	***Trichophyton rubrum***	●	●	●	
M7	***Trichothecium roseum*** *Cephalothecium roseum*	●	●	●	●

Fungi and Smuts



Item #	Product Name	Testing: ID 5 mL	Testing: Scratch 5 mL	Treatment: Glycerin	Treatment: Aqueous
Fungi Mixes					
M01	**Mold Mix #1** M1 *Alternaria alternata*, M5 *Aspergillus niger*, M12 *Bipolaris sorokiniana*, M13 *Cladosporium sphaerospermum*, M19 *Penicillium chrysogenum (notatum)*	●	●	●	●
M02	**Mold Mix #2** M21 *Aureobasidium pullulans*, M45 *Drechslera spicifera*, M11 *Fusarium moniliforme*, M27 *Mucor plumbeus*, M23 *Rhizopus stolonifer*	●	●	●	●
M03	**Mold Mix #3** M1 *Alternaria alternata*, M5 *Aspergillus niger*, M13 *Cladosporium sphaerospermum*, M19 *Penicillium chrysogenum (notatum)*	●	●	●	●
M064	**AHH Mix** M1 *Alternaria alternata*, M12 *Bipolaris sorokiniana*, M13 *Cladosporium sphaerospermum*	●	●	●	●
M0126	***Alternaria/Hormodendrum* Mix** M1 *Alternaria alternata*, M13 *Cladosporium sphaerospermum*	●	●	●	●
M04	***Aspergillus* Mix** M4 *A. amstelodami*, M2 *A. flavus*, M3 *A. fumigatus*, M35 *A. nidulans*, M5 *A. niger*	●	●	●	●
M0464	**Dematiaceae Mix** M1 *Alternaria alternata*, M21 *Aureobasidium pullulans*, M12 *Bipolaris sorokiniana*, M9 *Cladosporium herbarum*, M45 *Drechslera spicifera*, M40 *Helminthosporium solani*	●	●	●	●
M09	***Fusarium* Mix** M11 *F. moniliforme*, M48 *F. solani*	●	●	●	●
M010	***Monilia* Mix** M15 *Candida albicans*, M16 *Neurospora intermedia*	●	●	●	●
M011	***Mucor* Mix** M68 *M. circinelloides* f. *lusitanicus*, M27 *M. plumbeus*	●	●	●	
M08	**New Stock Fungi Mix** M6 *Acremonium strictum*, M1 *Alternaria alternata*, M5 *Aspergillus niger*, M21 *Aureobasidium pullulans*, M12 *Bipolaris sorokiniana*, M30 *Botrytis cinerea*, M15 *Candida albicans*, M8 *Chaetomium globosum*, M13 *Cladosporium sphaerospermum*, M29 *Epicoccum nigrum*, M11 *Fusarium moniliforme*, M27 *Mucor plumbeus*, M19 *Penicillium chrysogenum (notatum)*, M39 *Phoma betae*, M23 *Rhizopus stolonifer*, M26 *Trichophyton mentagrophytes*	●	●	●	●
M05	***Penicillium* Mix** M17 *P. camembertii*, M18 *P. chrysogenum*, M28 *P. digitatum*, M19 *P. chrysogenum (notatum)*, M42 *P. roquefortii*	●	●	●	●
M06	***Phycomycetes* Mix** M68 *Mucor circinelloides* f. *lusitanicus*, M23 *Rhizopus stolonifer*	●	●	●	●
M012	***Rhizopus* Mix** M22 *R. oryzae*, M23 *R. stolonifer*	●	●	●	●

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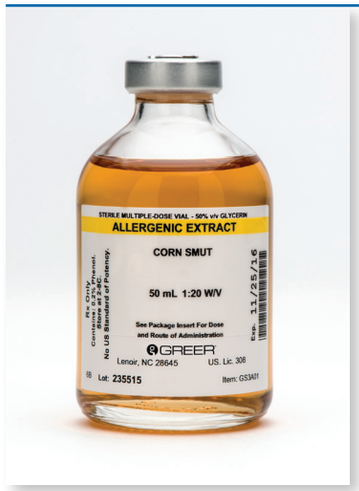
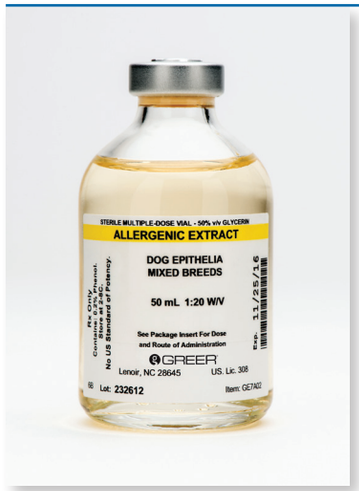


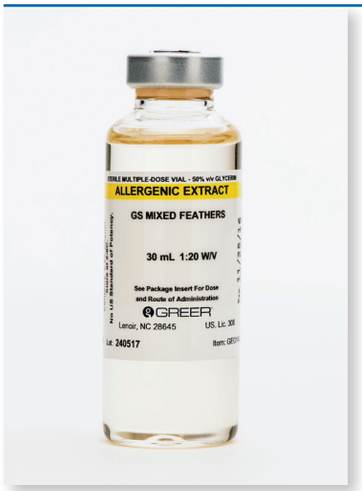
Item #	Product Name	Testing		Treatment	
		ID 5 mL	Scratch 5 mL	Glycerin	Aqueous
Smuts					
	All smut products are available in 50% glycerin only.				
S1	**Loose Barley Smut** *Ustilago nuda*		●	●	
S2	**Bermuda Grass Smut** *Ustilago cynodontis*		●	●	
S3	**Corn Smut*** *Ustilago maydis*		●	●	
S4	**Johnson Grass Smut** *Sporisorium cruentum*		●	●	
S5	**Oat Smut** *Ustilago avenae*		●	●	
S6	**Loose Wheat Smut*** *Ustilago tritici*		●	●	
Smut Mixes					
	All smut mixes are available in 50% glycerin only.				
S02	**Grain Smut Mix*** S3 Corn Smut, S1 Loose Barley Smut, S6 Loose Wheat Smut, S5 Oat Smut		●	●	
S01	**Grass Smut Mix*** S2 Bermuda Grass Smut, S4 Johnson Grass Smut		●	●	

Epithelia, Miscellaneous Inhalants, and Insects



Item #	Product Name	Testing		Treatment	
		ID 5 mL	Scratch 5 mL	Glycerin	Aqueous
Epithelia					
TE3	**Standardized Cat Hair** *Felis catus (domesticus)*		●	●	
E4	**Cattle Epithelia*** *Bos taurus*	●	●	●	●
E7	**Dog Epithelia** *Canis* sp.	●	●	●	●
E50	**Gerbil Epithelia** *Meriones unguiculatus*	●	●	●	●
E11	**Goat Epithelia** *Capra hircus*	●	●	●	●
E14	**Guinea Pig Epithelia*** *Cavia porcellus*	●	●	●	●
E44	**Hamster Epithelia*** *Mesocricetus auratus*	●	●	●	●
E15	**Hog Epithelia** *Sus scrofa*	●	●	●	●
E17	**Horse Epithelia*** *Equus caballus*	●	●	●	●
E20	**Mouse Epithelia*** *Mus musculus*	●	●	●	●
E24	**Rabbit Epithelia*** *Oryctolagus cuniculus*	●	●	●	●
E25	**Rat Epithelia*** *Rattus norvegicus*	●	●	●	●

Epithelia, Miscellaneous Inhalants, and Insects



Item #	Product Name	Testing ID 5 mL	Testing Scratch 5 mL	Treatment Glycerin	Treatment Aqueous
Feathers					
E2	**Canary Feathers*** *Serinus canaria*	●	●	●	●
E5	**Chicken Feathers** *Gallus gallus*	●	●	●	●
E8	**Duck Feathers** *Anas platyrhynchos*	●	●	●	●
E12	**Goose Feathers** *Anser anser*	●	●	●	●
E22	**Parakeet Feathers*** Psittacidae	●	●	●	●
Feather Mix					
E01	**Feather Mix** E5 Chicken Feathers, E8 Duck Feathers, E12 Goose Feathers	●	●	●	●

Item #	Product Name	Testing ID 5 mL	Testing Scratch 5 mL	Bulk Extract Glycerin	Bulk Extract Aqueous
Miscellaneous Inhalants					
H21	**Cotton Linters** *Gossypium hirsutum*	●	●	●	●
H1	**Cottonseed** *Gossypium hirsutum* (For Diagnostic Use Only)	●	●	●	●
H2	**Flaxseed** *Linum usitatissimum* (For Diagnostic Use Only)	●	●	●	●
H15	**Gum Arabic*** *Acacia senegal*	●	●	●	●
H9	**Gum Karaya** *Sterculia urens*	●	●	●	●
H18	**Gum Tragacanth*** *Astragalus gummifer*	●	●	●	●
H4	**Kapok Seed** *Ceiba pentandra*	●	●	●	●
H5	**Orris Root** *Iris germanica* var. *florentina*	●	●	●	●
H6	**Pyrethrum** *Chrysanthemum cinerariifolium*	●	●	●	●
H7	**Silk*** *Bombyx mori*	●	●	●	●
H8	**Tobacco Leaf** *Nicotiana tabacum*	●	●	●	●
Insects (Whole Body)					
B31	**Ant, Black/Carpenter*** *Camponotus pennsylvanicus*	●	●	●	●
B47	**Ant, Fire*** *Solenopsis invicta*	●	●	●	
B14	**Ant, Fire*** *Solenopsis richteri*	●	●	●	
B28	**Caddisfly*** Trichoptera	●	●	●	●

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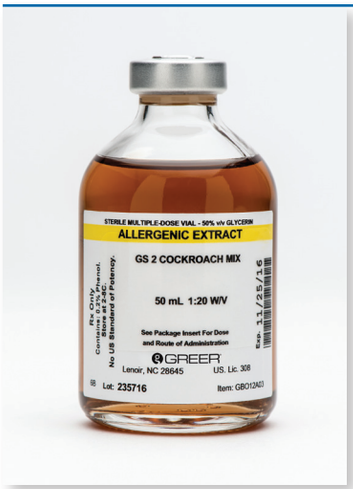

Item #	Product Name	Testing ID 5 mL	Testing Scratch 5 mL	Bulk Extract Glycerin	Bulk Extract Aqueous
Insects (Whole Body) *Continued*					
B26	**Cockroach, American*** *Periplaneta americana*	●	●	●	
B46	**Cockroach, German*** *Blattella germanica*	●	●	●	
B39	**Deer Fly*** *Chrysops* spp.	●	●	●	●
B22	**Flea* (Aqueous Only)** *Ctenocephalides* spp. (For Diagnostic Use Only)	●			●
B8	**House Fly*** *Musca domestica* (For Diagnostic Use Only)	●	●	●	●
B12	**Mayfly*** Ephemeroptera	●	●	●	●
B10	**Mosquito*** *Aedes taeniorhynchus* (For Diagnostic Use Only)	●	●	●	●
B11	**Moth*** Lepidoptera (For Diagnostic Use Only)	●	●	●	●
Insect Mix (Whole Body)					
B012	**2 Cockroach Mix** B26 American, B46 German	●	●	●	

Ingestant Extracts

All ingestant products are available in 50% glycerin only.

Item #	Product Name	Testing 5mL Scratch	Bulk Extract Glycerin
Plant Foods			
F48	**Apple** *Malus pumila*	●	●
F49	**Apricot** *Prunus armeniaca*	●	●
F55	**Banana** *Musa* x *paradisiaca* var. *paradisiaca*	●	●
F56	**Barley** *Hordeum vulgare* (For Diagnostic Use Only)	●	●
F59	**Bean, Lima** *Phaseolus lunatus*	●	●
F295	**Bean, Navy** *Phaseolus vulgaris*	●	●
F63	**Bean, String/Green** *Phaseolus vulgaris*	●	●
F70	**Blueberry** *Vaccinium myrtilloides*	●	●
F73	**Broccoli** *Brassica oleracea* var. *botrytis*	●	●
F75	**Buckwheat** *Fagopyrum esculentum*	●	●
F76	**Cabbage** *Brassica oleracea* var. *capitata*	●	●
F79	**Cantaloupe** *Cucumis melo*	●	●
F82	**Carrot** *Daucus carota*	●	●

Ingestant Extracts

All ingestant products are available in 50% glycerin only.

Plant Foods *Continued*

Item #	Product Name	Testing 5mL Scratch	Bulk Extract Glycerin
F87	**Cauliflower** *Brassica oleracea* var. *botrytis*	●	●
F88	**Celery** *Apium graveolens* var. *dulce*	●	●
F90	**Cherry** *Prunus* sp.	●	●
F93	**Chocolate/Cocoa bean** *Theobroma cacao*	●	●
F95	**Cinnamon** *Cinnamomum verum*	●	●
F99	**Coffee** *Coffea arabica* (For Diagnostic Use Only)	●	●
F102	**Corn** *Zea mays*	●	●
F108	**Cranberry** *Vaccinium macrocarpon*	●	●
F109	**Cucumber** *Cucumis sativus*	●	●
F121	**Garlic** *Allium sativum*	●	●
F122	**Ginger** *Zingiber officinale*	●	●
F125	**Grape** *Vitis* sp.	●	●
F128	**Grapefruit** *Citrus* x *paradisi*	●	●
F132	**Hops** *Humulus lupulus*	●	●
F139	**Lemon** *Citrus limon*	●	●
F142	**Lettuce** *Lactuca sativa*	●	●
F148	**Malt** *Hordeum vulgare*	●	●
F150	**Mushroom** *Agaricus bisporus*	●	●
F297	**Mustard** *Brassica* spp.	●	●
F153	**Nutmeg** *Myristica fragrans*	●	●
F154	**Oat** *Avena sativa* (For Diagnostic Use Only)	●	●
F156	**Olive, Green** *Olea europaea*	●	●
F158	**Onion** *Allium cepa* var. *cepa*	●	●
F159	**Orange** *Citrus sinensis*	●	●
F169	**Pea, Green (English)** *Pisum sativum*	●	●
F170	**Peach** *Prunus persica*	●	●
F172	**Pear** *Pyrus communis*	●	●
F175	**Pepper, Black** *Piper nigrum*	●	●
F177	**Pepper, Green** *Capsicum annuum* var. *annuum*	●	●

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Item #	Product Name	Testing 5mL Scratch	Bulk Extract Glycerin
Plant Foods *Continued*			
F181	**Pineapple** *Ananas comosus* (For Diagnostic Use Only)	●	●
F190	**Potato, Sweet** *Ipomoea batatas*	●	●
F191	**Potato, White** *Solanum tuberosum*	●	●
F198	**Raspberry** *Rubus idaeus* var. *idaeus*	●	●
F200	**Rice** *Oryza sativa*	●	●
F204	**Rye** *Secale cereale* (For Diagnostic Use Only)	●	●
F208	**Sesame Seed** *Sesamum orientale (indicum)*	●	●
F209	**Soybean** *Glycine max*	●	●
F211	**Spinach** *Spinacia oleracea* (For Diagnostic Use Only)	●	●
F212	**Squash, Yellow Summer** Cucurbitaceae	●	●
F216	**Strawberry** *Fragaria chiloensis*	●	●
F225	**Tomato** *Solanum lycopersicum* var. *lycopersicum*	●	●
F228	**Vanilla Bean** *Vanilla planifolia*	●	●
F232	**Watermelon** *Citrullus lanatus* var. *lanatus*	●	●
F235	**Wheat, Whole** *Triticum aestivum* (For Diagnostic Use Only)	●	●
Animal Foods			
F241	**Beef** *Bos taurus*	●	●
F251	**Lamb** *Ovis aries*	●	●
F258	**Pork** *Sus scrofa*	●	●
Poultry Products			
F265	**Chicken Meat** *Gallus gallus*	●	●
F272	**Egg White, Chicken** *Gallus gallus*	●	●
F271	**Egg Whole, Chicken** *Gallus gallus*	●	●
F273	**Egg Yolk, Chicken** *Gallus gallus*	●	●
F346	**Turkey Meat** *Meleagris gallopavo*	●	●
Dairy Products			
F293	**Milk, Cow** *Bos taurus*	●	●

Ingestant Extracts

All ingestant products are available in 50% glycerin only.

Item #	Product Name	Testing 5mL Scratch	Bulk Extract Glycerin
Fish and Shellfish			
F4	**Bass, Black** *Centropristis striata*	●	●
F8	**Catfish** *Ictalurus* spp.	●	●
F10	**Clam** *Mercenaria* spp.	●	●
F11	**Codfish** *Gadus* spp.	●	●
F11	**Codfish** *Gadus* spp.	●	●
F12	**Crab** *Callinectes* spp.	●	●
F16	**Flounder** *Platichthys* sp.	●	●
F20	**Lobster** *Homarus americanus*	●	●
F21	**Mackerel** *Scomberomorus cavalla*	●	●
F23	**Oyster** *Ostrea/Crassostrea*	●	●
F24	**Perch** *Serranus scriba*	●	●
F30	**Salmon** *Salmo salar*	●	●
F32	**Scallop** *Placopecten magellanicus*	●	●
F34	**Shrimp, White/Brown/Pink** *Litopaenaeus setiferus/Farfantepenaeus aztecus/Farfantepenaeus dourarum*	●	●
F40	**Trout, Lake** *Oncorhynchus mykiss*	●	●
F41	**Tuna** *Thunnus* sp.	●	●
Food Mixes			
F01	**Fish Mix** F11 Codfish, F16 Flounder, F18 Halibut, F21 Mackerel, F41 Tuna	●	●
F02	**Shellfish Mix** F10 Clam, F12 Crab, F23 Oyster, F32 Scallops, F34 Shrimp	●	●
Nuts			
F46	**Almond** *Prunus dulcis*	●	●
F72	**Brazil Nut** *Bertholletia excelsa*	●	●
F84	**Cashew Nut** *Anacardium occidentale*	●	●
F98	**Coconut** *Cocos nucifera*	●	●
F120	**Filbert/Hazelnut** *Corylus americana*	●	●
F171	**Peanut** *Arachis hypogaea*	●	●
F173	**Pecan** *Carya illinoinensis*	●	●
F229	**Walnut, Black** *Juglans nigra*	●	●
F230	**Walnut, English** *Juglans regia*	●	●

Please see inside back cover for important safety information about GREER® Extracts™. In addition, please see accompanying package inserts for full prescribing information, including BOXED WARNING, in the pocket inside the back cover or go to www.greerlabs.com.

● — Item is offered in one or more vial sizes/dilutions unless noted
● — Standardized or contains a standardized item
(Blank space) — Not offered
* — Premium offering

Made-to-Order Items

Specific non-stocked products have been identified as made-to-order items based on low utilization. Delivery will be a minimum of 4 to 6 weeks. Please consult your Customer Care Specialist for more information.

Premium Allergens

Specific products have been designated as premium allergens due to low utilization, decreased availability of raw materials, increased costs associated with the collection/extraction process, and/or market conditions. These items carry a surcharge. Please consult your Customer Care Specialist for more information.

For information on custom mixtures, please contact a GREER® Customer Care Specialist at 800.378.3906.

Sterile Diluents

Diluents come in a variety of fills. 30 mL and 100 mL vials are overfilled to ensure that their labeled amount can be withdrawn. GREER® Sterile Diluents™ (Normal, Buffered, HSA, and 10% Glycerin Saline) contain 0.4% phenol, which acts as a preservative by inhibiting microbial growth.[1] Two neck sizes give a choice of stopper diameter. The second number after the vial size is the outer diameter of the top of the vial in millimeters.

Normal Saline

Also called Phenolated Saline. Water for injection (WFI) with 0.9% NaCl.

Item #	Fill/mL	Vial Size	Vial Seal Color	Qty/Pack
SD2507007	2.0 mL	5–13	Silver	25
SD2507001	2.0 mL	5–20	Silver	25
SD2507010	4.0 mL	5–13	Silver	25
SD2507041	4.0 mL	5–13	Red	25
SD2507042	4.0 mL	5–13	Blue	25
SD2507043	4.0 mL	5–13	Green	25
SD2507044	4.0 mL	5–13	Yellow	25
SD2507045	4.0 mL	5–13	Pink	25
SD2507046	4.0 mL	5–13	Purple	25
SD2507047	4.0 mL	5–13	Orange	25
SD2507020	4.5 mL	5–13	Silver	25
SD2507031	4.5 mL	5–13	Red	25
SD2507032	4.5 mL	5–13	Blue	25
SD2507033	4.5 mL	5–13	Green	25
SD2507034	4.5 mL	5–13	Yellow	25
SD2507035	4.5 mL	5–13	Pink	25
SD2507036	4.5 mL	5–13	Purple	25
SD2507028	4.0 mL	5–20	Silver	25
SD2507024	4.0 mL	5–20	Red	25
SD2507027	4.0 mL	5–20	Blue	25
SD2507025	4.0 mL	5–20	Green	25
SD2507136	4.0 mL	5–20	Yellow	25
SD2507038	4.0 mL	5–20	Pink	25
SD2507039	4.0 mL	5–20	Purple	25
SD2507037	4.0 mL	5–20	Orange	25
SD2507030	4.5 mL	5–20	Silver	25
SD2507040	4.5 mL	5–20	Red	25
SD2507060	4.5 mL	5–20	Blue	25
SD2507050	4.5 mL	5–20	Green	25
SD2507137	4.5 mL	5–20	Yellow	25
SD2507075	8.0 mL	10–13	Silver	25
SD2507131	8.0 mL	10–20	Silver	25
SD2507080	9.0 mL	10–13	Silver	25
SD2507090	9.0 mL	10–20	Silver	25
SD2507100	9.0 mL	10–20	Red	25
SD2507120	9.0 mL	10–20	Blue	25
SD2507110	9.0 mL	10–20	Green	25
SD2507138	9.0 mL	10–20	Yellow	25
SD1007139	24 mL	30–20	Silver	10
SD1007140	30 mL	30–20	Silver	10
SD07143	100 mL	100–20	Silver	12

1. Cox L, Nelson H, Lockey R, et al. Allergen immunotherapy: a practice parameter third update. *J Allergy Clin Immunol.* January 2011;127(Suppl 1):S1-55.

Item #	Fill/mL	Vial Size	Vial Seal Color	Qty/Pack

HSA (Human Serum Albumin) Saline*

Normal Saline with 0.03% Human Serum Albumin added to enhance the stability of very dilute extracts. HSA helps maintain allergen potency by preventing adsorption of proteins to vial walls.[1,2]

SH2507260	1.8 mL	5–20	Silver	25
SH2507291	4.0 mL	5–20	Silver	25
SH2507292	4.0 mL	5–20	Red	25
SH2507294	4.0 mL	5–20	Blue	25
SH2507293	4.0 mL	5–20	Green	25
SH2507362	4.0 mL	5–20	Yellow	25
SH2507300	4.5 mL	5–20	Silver	25
SH2507310	4.5 mL	5–20	Red	25
SH2507330	4.5 mL	5–20	Blue	25
SH2507320	4.5 mL	5–20	Green	25
SH2507283	4.5 mL	5–20	Yellow	25
SH2507290	4.5 mL	5–13	Silver	25
SH2507301	4.5 mL	5–13	Red	25
SH2507302	4.5 mL	5–13	Blue	25
SH2507303	4.5 mL	5–13	Green	25
SH2507304	4.5 mL	5–13	Yellow	25
SH2507345	8.0 mL	10–20	Silver	25
SH2507350	9.0 mL	10–13	Silver	25
SH2507360	9.0 mL	10–20	Silver	25
SH2507361	9.0 mL	10–20	Red	25
SH2507359	9.0 mL	10–20	Blue	25
SH2507363	9.0 mL	10–20	Green	25
SH2507364	9.0 mL	10–20	Yellow	25
SH1007371	27 mL	30–20	Silver	10
SH1007370	30 mL	30–20	Silver	10
SH07380	100 mL	100–20	Silver	12

*HSA Limit of Liability

If a lot of Human Serum Albumin (HSA) contained in this product is recalled by the manufacturer for any reason, GREER® hereby states our limit of liability to that of replacing the unused vials within the carton, and any unopened cartons of HSA diluent affected by the recall.

1. Cox L, Nelson H, Lockey R, et al. Allergen immunotherapy: a practice parameter third update. *J Allergy Clin Immunol.* January 2011;127(Suppl 1):S1-55.
2. Nelson MR, Cox L. Allergen immunotherapy extract preparation manual. American Academy of Allergy Asthma & Immunology website. http://www.aaaai.org/Aaaai/media/MediaLibrary/PDF%20Documents/Practice%20Management/PM%20Resource%20Guide/Ch-9-Allergen-Immunotherapy-Extract-Preparation-Manual.pdf. Published 2012. Accessed August 20, 2013.

Sterile Diluents

50% Glycerin Saline

50% Glycerin Saline is often used to enhance the stability of extracts. 50% Glycerin Saline also helps protect the structure of allergenic proteins that may be particularly susceptible to degradation in solution and may help protect against the effects of prolonged exposure to room temperature.[1]

Item #	Fill/mL	Vial Size	Vial Seal Color	Qty/Pack
SA5007212	100 mL	100–20	Silver	12

10% Glycerin Saline

Normal Saline with 10% glycerin is often used as an alternative to HSA to enhance the stability of very dilute extracts. (Not recommended for intradermal testing.)[2]

SG2507183	4.0 mL	5–13	Silver	25
SG2507208	4.5 mL	5–13	Silver	25
SG2507174	4.5 mL	5–13	Red	25
SG2507175	4.5 mL	5–13	Blue	25
SG2507176	4.5 mL	5–13	Green	25
SG2507177	4.5 mL	5–13	Yellow	25
SG2507209	4.0 mL	5–20	Silver	25
SG2507207	4.0 mL	5–20	Red	25
SG2507198	4.0 mL	5–20	Blue	25
SG2507197	4.0 mL	5–20	Green	25
SG2507229	4.0 mL	5–20	Yellow	25
SG2507236	4.0 mL	5–20	Pink	25
SG2507237	4.0 mL	5–20	Purple	25
SG2507238	4.0 mL	5–20	Orange	25
SG2507200	4.5 mL	5–20	Silver	25
SG2507201	4.5 mL	5–20	Red	25
SG2507203	4.5 mL	5–20	Blue	25
SG2507202	4.5 mL	5–20	Green	25
SG2507230	4.5 mL	5–20	Yellow	25
SG2507211	8.0 mL	10–13	Silver	25
SG2507181	8.0 mL	10–20	Silver	25
SG2507228	9.0 mL	10–13	Silver	25
SG2507221	9.0 mL	10–13	Red	25
SG2507222	9.0 mL	10–13	Blue	25
SG2507223	9.0 mL	10–13	Green	25
SG2507224	9.0 mL	10–13	Yellow	25
SG2507191	9.0 mL	10–20	Silver	25
SG2507192	9.0 mL	10–20	Red	25
SG2507194	9.0 mL	10–20	Blue	25
SG2507193	9.0 mL	10–20	Green	25
SG2507231	9.0 mL	10–20	Yellow	25
SG1007210	30 mL	30–20	Silver	10
SG07213	100 mL	100–20	Silver	12

1. Nelson MR. Joint Council of Allergy, Asthma and Immunology. Physician's instruction guide for the preparation of allergen extract: http://www.aaaai.org/Aaaai/media/MediaLibrary/PDF%20Documents/Practice%20Management/PM%20Resource%20Guide/Ch-9-Allergen-Immunotherapy-Extract-Preparation-Manual.pdf. Published February 20, 2009. Accessed March 22, 2012.

2. Nelson HS. Effect of preservatives and conditions of storage on the potency of allergy extracts. *J Allergy Clin Immunol.* January 1981;67(1):64-69.

Item #	Fill/mL	Vial Size	Vial Seal Color	Qty/Pack
Buffered Saline				
Buffered Saline maintains extract solutions at physiological pH levels.[1] Contains sodium and potassium phosphates with 0.5% NaCl for isotonicity, in water for injection (WFI).				
SB2507145	4.5 mL	5–20	Silver	25
SB2507146	4.5 mL	5–20	Red	25
SB2507147	4.5 mL	5–20	Blue	25
SB2507148	4.5 mL	5–20	Yellow	25
SB2507149	4.5 mL	5–20	Green	25
SB2507156	9.0 mL	10–20	Silver	25
SB07150	100 mL	100–20	Silver	12

1. Fasman GE. Measurement of pH: buffer solutions. *Practical Handbook of Biochemistry and Molecular Biology.* Boca Raton, FL: CRC Press; 1989: 544-549.

Sterile Empty Vials

Manufactured by GREER® in a wide range of convenient sizes.

Item #	Vial Size	Vial Seal Color	Qty/Pack
SE2508020	2–13	Silver	25
SE2508030	5–13	Silver	25
SE2508031	5–13	Red	25
SE2508032	5–13	Blue	25
SE2508033	5–13	Green	25
SE2508034	5–13	Yellow	25
SE2508040	5–20	Silver	25
SE2508050	5–20	Red	25
SE2508060	5–20	Green	25
SE2508070	5–20	Blue	25
SE2508081	5–20	Orange	25
SE2508082	5–20	Pink	25
SE2508083	5–20	Purple	25
SE2508084	5–20	Yellow	25
SE2508090	10–13	Silver	25
SE2508091	10–13	Red	25
SE2508092	10–13	Blue	25
SE2508093	10–13	Green	25
SE2508094	10–13	Yellow	25
SE2508100	10–20	Silver	25
SE2508110	10–20	Red	25
SE2508120	10–20	Green	25
SE2508130	10–20	Blue	25
SE2508150	10–20	Yellow	25
SE1008150	30–20	Silver	10
SE08155	50–20	Silver	12
SE08160	100–20	Silver	12

Plastic Colored Caps

Snap-on color-coded caps can be used to differentiate strengths of treatment extracts.

13 mm Item #	Cap Color	Qty/Pack
PCYEL13	Yellow	25
PCORG13	Orange	25
PCRED13	Red	25
PCGRN13	Green	25
PCPNK13	Pink	25
PCPUR13	Purple	25
PCBLU13	Blue	25
20 mm Item #	**Cap Color**	**Qty/Pack**
PCYEL20	Yellow	25
PCORG20	Orange	25
PCRED20	Red	25
PCGRN20	Green	25
PCWHT20	White	25
PCPNK20	Pink	25
PCPUR20	Purple	25
PCBLU20	Blue	25

Dropper Vials

Item #	Description	Qty/Pack
5NSEVA	Nonsterile 5 mL vial with dropper cap, screw thread Type 1 glass	25
10NSEV	Nonsterile 10 mL vial with dropper cap, screw thread Type 1 glass	25

Safety Syringes

Photo courtesy of Magellan™

Item #	Description
Magellan™ Tuberculin Safety Syringe Trays	
MAS27T	1 cc 27 g x 1/2" regular bevel, 20 syringes/tray, 40 trays (800/case)
Becton-Dickinson	
BD5553	Safety-Lok™ 1 cc 27 g x 1/2" regular bevel, individually wrapped (500/case)
BD5950	SafetyGlide™ 1 cc 27 g x 1/2" regular bevel, 25 syringes/tray, 40 trays (1,000/case)
BD5951	SafetyGlide™ 1 cc 26 g x 3/8" intradermal bevel, 25 syringes/tray, 40 trays (1,000/case)

Syringes and Syringe Trays

Item #	Description
Becton–Dickinson	
Cases consist of 25 syringes/tray, 40 trays (1,000/case).	
BD5535	1/2 cc 27 g x 1/2" regular bevel
BD5536	1/2 cc 27 g x 3/8" intradermal bevel
BD5537	1 cc 26 g x 1/2" regular bevel
BD5538	1 cc 26 g x 1/2" intradermal bevel
BD5539	1 cc 26 g x 3/8" intradermal bevel
BD5540	1 cc 27 g x 1/2" regular bevel
BD5541	1 cc 27 g x 3/8" intradermal bevel
BD5542	1 cc 27 g x 3/8" regular bevel
Terumo	
Cases consist of 25 syringes/tray, 40 trays (1,000/case).	
TB26T1	1 cc 26 g x 3/8" regular bevel
TB27T1	1 cc 27 g x 1/2" regular bevel
TB28T1	1 cc 27 g x 3/8" intradermal bevel
TB07T1	1 cc 27 g x 1/2" intradermal bevel
Syringe Trays	
RACHST	Rachman Syringe Tray: composed of sturdy, heavy-gauge ABS plastic that holds 18 syringes per tray. Measures 14 1/16" L x 9 1/4" W x 1 3/4" D
GRS025	Plastic Syringe Tray Sets: 5 sets/pack, 2-layer tray, holds 25 syringes
GRSS025	Safety Syringe Organizer Tray: 5 sets/pack, 2-layer tray, holds 25 syringes

Ancillary Products

Mailing Containers

Inner compartments (trays) slide into outer cardboard cartons (boxes) for quick packaging. Sturdy material designed to help protect vials from breakage during transportation.

Item #	Vial Size Type	Holds
5133B	5 mL (13 mm neck)	3 vials
5133T	5 mL (13 mm neck)	3 vials
5136B	5 mL (13 mm neck)	6 vials
5136T	5 mL (13 mm neck)	6 vials
5203B	5mL (20mm neck)	3 vials
5203T	5mL (20mm neck)	3 vials
5206B	5mL (20mm neck)	6 vials
5206T	5mL (20mm neck)	6 vials
10133B	10 mL (13 mm neck)	3 vials
10133T	10 mL (13 mm neck)	3 vials
10136B	10 mL (13 mm neck)	6 vials
10136T	10 mL (13 mm neck)	6 vials
5203C-100*	5 and 10 mL (20 mm neck)	3 vials
5206C-100*	5 and 10 mL (20 mm neck)	6 vials

Note: B in item number indicates boxes
Note: T in item number indicates trays
*These items include both boxes and trays

Styrofoam Containers

Sturdy molded styrofoam conforms to each vial allowing protection against breakage and provides additional insulation when exposed to heat or cold. Lightweight design makes shipping easy and economical.

Item #	Description
STY1C	Holds any of our 5 mL or 10 mL vials or two 2 mL vials (250 case)
STY5C	Holds up to five 5 mL or 10 mL vials with space for instruction sheet (200 case)

Item #	Size	Qty/Case

Jiffy™ Mailing Bags

Lightweight mailers are padded for added protection of extract vials. These versatile mailers allow for easy shipping of different materials.

JB0C	6" x 10"	250
JB1C	7 1/4" x 12"	100
JB2C	8 1/2" x 12"	100

Item #	Description	Qty

Sharps Collectors

OSHA-approved containers for contaminated waste. Available in multiple sizes: 8.2 quart, 5 gallon, and 6 gallon.

BD5490	Sharps Collector, 8.2 quarts	12 per case
BD5491	Sharps Collector, 5 gallons	8 per case
BD5465	Sharps Collector, 6 gallons, funnel top	12 per case

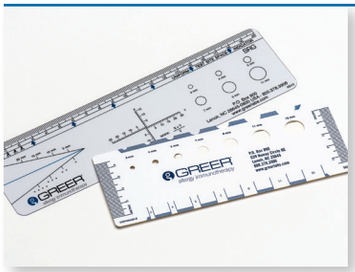
Item #	Color	Size	Quantity

Stock and Custom-Printed Labels

Pressure-sensitive labels adhere quickly and firmly to vials. Stock labels include space for vial labeling information recommended by allergy immunotherapy practice parameter.[1] For information about custom-printed labels, please contact your Customer Care Specialist.

L-PVLR	Red	1.625" x 1"	1,000/roll
L-PVLB	Blue	1.625" x 1"	1,000/roll
L-PVLG	Green	1.625" x 1"	1,000/roll
L-PVLY	Yellow	1.625" x 1"	1,000/roll
L-PVLBK	Black	1.625" x 1"	1,000/roll

1. Cox L, Nelson H, Lockey R, et al. Allergen immunotherapy: a practice parameter third update. *J Allergy Clin Immunol.* January 2011;127(Suppl 1):S1-S55.



Item #	Description

Skin Reaction Guides

Skin reaction guides help clinicians accurately measure the wheal and erythema response following percutaneous skin testing. Both plastic reusable and paper disposable skin reaction guides are available.

SRG	Clear Plastic (1 pack contains 12)
SRG3	Disposable Paper (1 pack contains 100)

Vial Racks

GREER® Versa Vial Rack®

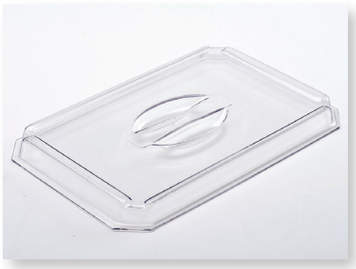
This one-color design features four easy-grip handles and tiered wells to hold multiple vial sizes. Racks are stackable with special drains in every well for quick cleanup. Three different base sizes allow for a better fit in most refrigerators.

Item #	Style	Vial Capacity	To Hold	Size
VRB001	Bulk Versa Vial Rack	39	50–20 vials 30–20 vials 10–13 vials	9 1/8" x 13 1/8"
VRT002	Testing Versa Vial Rack	48 plus 2 controls	5 mL scratch vials 5–13 vials Labeled negative and positive controls in two sizes	8" x 10"
VRLT005	Testing Versa Vial Rack (large)	72 plus 2 controls	5 mL scratch vials 5–13 vials Labeled negative and positive controls in two sizes	8" x 14.5"
VRP003	Prescription Versa Vial Rack	48	5–20 vials 10–13 vials 10–20 vials	8" x 10"
VRLP004	Prescription Versa Vial Rack (large)	72	5–20 vials 10–13 vials 10–20 vials	8" x 14.5"

Skin Testing Devices

The GREER® Pick® System

Versatile. Convenient. Easy to Use. GREER® Pick®, a self-loading, 6-tine, single site device, can average 1,800 tests from one 5 mL vial when the GREER® Pick® Well™ is filled with 0.125 mL of glycerinated extract.[1]



For more information on GREER® Pick®, see accompanying directions for use in the pocket inside the back cover or visit www.greerlabs.com.

Item #	Description
GREER® Pick® Packaged in 50 sterile pouches each containing 42 picks; 2,100 picks per case.	
GP-1C	2,100 picks per case
GREER® Pick® Well™ Packaged in sterile pouches each containing 24 wells.	
GW-2	24 wells per pouch
GREER® Pick® Tray™ The clear GREER® Pick® Tray™ allows for easy inspection of extract levels and the closed-well system maintains extract integrity and provides for spill-free transporting. Each stackable tray can be labeled for easy identification. The GREER Pick Tray is available as a 60-well or 40-well tray. Upon request, customized, laminated color labels are available for all trays at no additional cost.	
GY-5	Holds 60 wells per tray
GY-40	Holds 40 wells per tray
GREER® Pick® Tray™ Lid The convenient tabbed lid helps pop the top effortlessly and provides spill-free transporting.	
GY-LD	60-Well Tray Lid

1. GREER. Data on file. Evaluation of Allergenic Extract Consumption for the GREER® Pick® and GREER® Pick® Well™ Skin Test Device Components. June 10, 2004.

Skin Testing Devices

(Limit 3 packages per customer.)

(Limit 1 package per customer.)

Item #	Description
40-Well GREER® Pick® Evaluation Package	
GP-10	40-Well GREER® Pick® Tray™ (bottom component)
	GREER Pick Tray Lid (lid component)
	Labels (1 blank set of 40)
	GREER Pick , 420 picks (10 pouches)
	GREER® Pick® Well™, 48 wells (2 pouches)
	GREER Pick Skin Testing Instructional DVD
	Skin Reaction Guide, Disposable Paper
	Sample GREER Pick Skin Testing Sheet
	GREER Pick Practical Guide
60-Well GREER® Pick® Evaluation Package	
GP-11	60-Well GREER Pick Tray
	Labels (1 blank set of 60)
	GREER Pick, 630 picks (15 pouches)
	GREER Pick Well, 72 wells (3 pouches)
	GREER Pick Skin Testing Instructional DVD
	Skin Reaction Guide, Disposable Paper
	Sample GREER Pick Skin Testing Sheet
	GREER Pick Practical Guide

For more information on GREER® Pick®, see accompanying directions for use in the pocket inside the back cover or visit www.greerlabs.com.

Skintestor OMNI™ is manufactured by QTI Corporation and distributed by GREER®.

Item #	Description

Skintestor OMNI™

The Skintestor OMNI™ is a self-loading, 10-head multiple-site skin testing device that offers flexibility and efficiency. When the wells of the Skintestor OMNI tray are filled with 0.250 mL of extract, an average of 1,031 tests can be performed from one 5 mL glycerinated extract vial.[1] The versatile design of the Skintestor OMNI allows for simple use, whether for skin testing on a patient's arm or back.

One shelf pack contains 10 sterile Skintestor OMNI devices. There are 10 shelf packs or 100 devices per box. Upon request, customized, laminated color labels are available for all trays at no additional cost.

1. GREER. Data on file. DS043010: Comparisons of uptake of 50% glycerosaline by Skintestor OMNI devices using wells loaded with 0.250 mL and 0.500 mL fills at ambient and refrigerator temperatures. April 2010.

OM203C	**10 shelf packs per box; 100 devices per box**

Skintestor OMNI™ Trays

The Skintestor OMNI System includes the Skintestor OMNI self-loading, multiple-site skin testing device for use in either 20- or 40- well labeled trays. Three 20-well trays fit into a carrier tray to create a 60-well option. The Skintestor OMNI device fits securely over its wells to maintain the extract integrity and shields the extract from evaporation.

OMT1	**Skintestor OMNI Tray (1 sterile 20-well tray)**
OM303C	**Skintestor OMNI Tray Pouch (5 individually wrapped sterile 20-well trays)**
OM503	**Skintestor OMNI Carrier Tray (holds 3 sterile 20-well trays)**
OM403C	**Skintestor OMNI Tray (1 sterile 40-well tray)**

40-Well Skintestor OMNI™ Evaluation Package

OM-40	**1 Skintestor OMNI Shelf Pack**
	1 Skintestor OMNI 40-Well Tray
	Skintestor OMNI Skin Testing Instructional DVD
	Skin Reaction Guide, Disposable Paper
	Sample Skintestor OMNI Skin Testing Sheet
	Skintestor OMNI Practical Guide

60-Well Skintestor OMNI™ Evaluation Package

OM-EV	**1 Skintestor OMNI Shelf Pack**
	3 Skintestor OMNI 20-Well Trays
	1 Skintestor OMNI Carrier Tray
	Skintestor OMNI Skin Testing Instructional DVD
	Skin Reaction Guide, Disposable Paper
	Sample Skintestor OMNI Skin Testing Sheet
	Skintestor OMNI Practical Guide

GREER® Service Team

Your GREER® Service Team is devoted to providing continuous support for your practice. This team is comprised of:

– an **Allergy Sales Consultant**, an expert in assessing your allergy immunotherapy needs and helping you find the right solutions;

– the **Medical & Scientific Affairs Department**, an assembly of specialized individuals including physicians, nurse practitioners, medical sciences liaisons, and research scientists who assist your clinic with technical information and answer any medically-related questions; and

– **Customer Care Specialists**, knowledgeable, friendly, responsive professionals who are dedicated to your overall satisfaction.

With your GREER Service Team, you have GREER professionals ready to help you and your practice.

GREER. In Touch. Within Reach.®

GREER®
allergy immunotherapy

Allergenic extracts are indicated for skin test diagnosis and treatment (immunotherapy) of patients with seasonal and perennial allergies.

IMPORTANT SAFETY INFORMATION:

- Do not inject intravenously.
- **Allergenic extracts may cause severe life-threatening systemic reactions, including the rare occurrence of anaphylaxis or death.** Systemic reactions include: generalized skin erythema, urticaria, pruritus, angioedema, rhinitis, wheezing, laryngeal edema, and hypotension. Other adverse reactions include: nausea, emesis, abdominal cramps, and diarrhea.
- Intended for use only by physicians who are experienced in the administration of allergenic extracts. Initial dose must be based on skin test.
- Observe patients in the office for at least 30 minutes following treatment. Emergency measures and personnel trained in their use must be available immediately in the event of a life-threatening reaction. Immunotherapy may not be suitable for patients with medical conditions that reduce their ability to survive a systemic reaction.

Please see Package Inserts for full prescribing information including **BOXED WARNING** or go to www.greerlabs.com/index.php/human_allergy/package_inserts/.

GREER®
allergy immunotherapy

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 MPN 020414H1010 02.14 8K

ALLERGENIC EXTRACTS

Standardized Grass Pollen Extracts

U.S. Government License No. 308

GREER™
PO Box 800
Lenoir, NC 28645
USA

Revised 10/04

WARNING

THIS ALLERGENIC PRODUCT IS INTENDED FOR USE BY PHYSICIANS WHO ARE EXPERIENCED IN THE ADMINISTRATION OF ALLERGENIC EXTRACTS AND THE EMERGENCY CARE OF ANAPHYLAXIS, OR FOR USE UNDER THE GUIDANCE OF AN ALLERGY SPECIALIST.

THIS PRODUCT SHOULD NOT BE INJECTED INTRAVENOUSLY.

STANDARDIZED GRASS POLLEN EXTRACTS LABELED IN BIOEQUIVALENT ALLERGY UNITS (BAU)/ML ARE NOT INTERCHANGEABLE WITH GRASS POLLEN EXTRACTS LABELED IN ALLERGY UNITS (AU)/ML OR WITH NONSTANDARDIZED GRASS POLLEN EXTRACTS. FOR PREVIOUSLY UNTREATED PATIENTS OR PATIENTS PREVIOUSLY RECEIVING EXTRACTS FROM ANOTHER MANUFACTURER, THE INITIAL DOSE MUST BE BASED ON SKIN TESTING AS DESCRIBED IN THE DOSAGE AND ADMINISTRATION SECTION OF THIS INSERT. PATIENTS BEING SWITCHED FROM OTHER TYPES OF EXTRACTS TO STANDARDIZED EXTRACTS SHOULD BE INSTRUCTED TO RECOGNIZE ADVERSE REACTION SYMPTOMS AND CAUTIONED TO CONTACT THE PHYSICIAN'S OFFICE IF REACTION SYMPTOMS OCCUR. IN CERTAIN INDIVIDUALS THESE REACTIONS COULD BE FATAL. PATIENTS SHOULD BE OBSERVED FOR AT LEAST 20 MINUTES FOLLOWING TREATMENT. PATIENTS WITH LABILE OR STEROID-DEPENDENT ASTHMA ARE "HIGH RISK PATIENTS" WHO REQUIRE SPECIAL CAUTION IN DOSE ADMINISTRATION AND SHOULD REMAIN IN THE OFFICE FOR AT LEAST 30 MINUTES. AIRWAY OBSTRUCTION IN HIGH RISK PATIENTS CAN BE MONITORED BY PEAK FLOW MEASUREMENTS BEFORE AND AFTER ADMINISTRATION OF ALLERGENS. EMERGENCY MEASURES AS WELL AS PERSONNEL TRAINED IN THEIR USE SHOULD BE IMMEDIATELY AVAILABLE IN THE EVENT OF A LIFE THREATENING REACTION. TO REPORT SERIOUS ADVERSE EVENTS, THE FOOD AND DRUG ADMINISTRATION MED-WATCH NUMBER IS 1-800-332-1088. PATIENTS BEING SWITCHED FROM ONE LOT OF EXTRACT TO ANOTHER FROM THE SAME MANUFACTURER SHOULD HAVE THEIR DOSE REDUCED BY 75%.

RISK OF ANAPHYLAXIS SHOULD BE WEIGHED AGAINST BENEFITS: IN PATIENTS RECEIVING BETA BLOCKERS AS THEY MAY NOT BE RESPONSIVE TO BETA ADRENERGIC DRUGS SHOULD ANAPHYLAXIS OCCUR; IN PATIENTS WITH UNSTABLE OR STEROID-DEPENDENT ASTHMA; OR IN PATIENTS WITH CARDIOVASCULAR DISEASE.

REFER ALSO TO THE WARNINGS, PRECAUTIONS, ADVERSE REACTIONS AND OVERDOSAGE SECTIONS BELOW.

DESCRIPTION

Standardized Grass Pollen Allergenic Extracts are supplied as sterile solutions for intracutaneous or subcutaneous administration. Standardized Grass Pollen Allergenic Extracts include Bermuda (Cynodon dactylon), Kentucky Blue (June), (Poa pratensis), Meadow Fescue (Festuca elatior), Orchard (Dactylis glomerata), Perennial Rye (Lolium perenne), Redtop (Agrostis alba), Sweet Vernal (Anthoxanthum odoratum), and Timothy (Phleum pratense). Glycerinated concentrates contain the soluble extractants of the source material with 0.25% sodium chloride, 0.27% sodium bicarbonate, and 50% glycerin v/v. All extracts contain 0.4% phenol as the preservative. Source materials for each extract are the specific pollens collected from the respective plants.

Standardized Grass Pollen Extracts are labeled in Bioequivalent Allergy Units (BAU)/mL. STANDARDIZED GRASS POLLEN EXTRACTS LABELED IN BAU/ML ARE NOT INTERCHANGEABLE WITH GRASS POLLEN EXTRACTS LABELED IN AU/ML OR WITH NONSTANDARDIZED GRASS POLLEN EXTRACTS. Bioequivalent allergy units are assigned based on comparison by enzyme linked immunosorbent assay (ELISA) to references from the U. S. Food and Drug Administration, Center for Biologics Evaluation and Research (CBER). CBER References are assigned unitage based on quantitative skin testing.[1-4] CBER references which can be diluted 1:5,000,000 to intradermally elicit a 50 mm sum of erythema diameter response in highly puncture reactive subjects are assigned 100,000 BAU/mL, whereas references diluted 1:500,000 which elicit the same 50 mm sum of erythema diameter response are assigned 10,000 BAU/mL.

CLINICAL PHARMACOLOGY

The allergic reaction is dependent upon the presence of antigen-specific immunoglobulin E (IgE) antibodies that are bound to specific receptors on mast cells and basophils. The presence of IgE antibodies on mast cells and basophils sensitizes these cells and upon interaction with the appropriate allergen-histamine and other mediators are released. IgE antibody has been shown to correlate with atopic diseases such as allergic rhinitis and allergic asthma.[5-8] In the skin these mediators are responsible for the characteristic wheal and flare (erythema) reactions upon allergenic extract skin testing in persons with the specific allergies.[7-11]

Puncture test results with eight US reference extracts at 10,000 BAU/mL (15 grass-specific allergic subjects per extract) are shown in TABLE 1.[30] For the eight grass pollens, there was a mean sum-of-diameter wheal of 15.2 mm (SD = 1.8) and a mean sum-of-diameter erythema of 84.0 mm (SD = 5.8).

TABLE 1

Puncture Skin Tests with 10,000 BAU/mL Grass Extracts
(Bifurcated Needle)

Reference Pollen	Puncture Sum of Wheal (mm)		Puncture Sum of Erythema (mm)	
	Mean	Range	Mean	Range
Bermuda	15.7	7 - 31	90.3	43 - 123
Kentucky Blue/June	15.9	6 - 28	77.3	47 - 107
Meadow Fescue	11.9	7 - 22	81.1	57 - 115
Orchard	14.1	9 - 19	84.3	57 - 111
Perennial Rye	17.5	6 - 36	92.3	73 - 135
Redtop	14.1	8 - 19	77.1	42 - 98
Sweet Vernal	15.7	8 - 30	81.2	28 - 123
Timothy	16.9	8 - 40	88.3	51 - 109

Intradermal skin tests with eight U.S. reference extracts (TABLE 2) in highly puncture reactive subjects (TABLE 1) indicate that a calculated dose of 0.02 BAU/mL should yield an average sum of erythema reaction of 50 mm, as tested in subjects sensitive to the specific grass pollen extract. However in the more sensitive subjects, the dose was as low as 0.0003 BAU/mL for one grass to 0.002 BAU/mL for several others. Conversely, doses of from 0.1 to 1.9 BAU/mL were calculated to yield the same reaction in the least-sensitive subjects.

TABLE 2

Intradermal Skin Test Doses
(Calculated BAU/mL Required for 50 mm Sum of Erythema)

Reference Pollen	Bioequivalent Allergy Units/mL Mean	Range
Bermuda	0.02	0.0003 - 0.4
Kentucky Blue/June	0.02	0.004 - 0.1
Meadow Fescue	0.02	0.002 - 0.9
Orchard	0.02	0.002 - 1.9
Perennial Rye	0.02	0.002 - 0.7
Redtop	0.02	0.004 - 0.8
Sweet Vernal	0.02	0.002 - 1.0
Timothy	0.02	0.002 - 0.6

Specific immunotherapy with pollen extracts as employed for many years is helpful in reducing symptoms associated with exposure to the offending allergens. A summary of effectiveness by the Panel on Review of Allergenic Extracts, an advisory committee to the U. S. Food and Drug Administration, has been published.[12] Several mechanisms have been proposed to explain the effectiveness of immunotherapy: an increase in antigen-specific IgG antibodies is frequently associated with clinical effectiveness, although correlation is not

consistent in all studies; there is a decrease in specific IgE; and IgE production is suppressed during periods of seasonal or high exposure to the antigen.[13] Other changes following immunotherapy have been noted including development of auto-anti-idiotypic antibodies, a decrease in blood basophil sensitivity to allergen, a decrease in lymphokine production and lymphocyte proliferation by cells exposed to allergen, and development of allergen-specific suppressor cells.[14] The complete mechanisms of immunotherapy are not known and remain the subject of investigation.

Standardized versus nonstandardized extracts: Standardized grass pollen extracts cannot be directly compared to the previously marketed nonstandardized extract concentrates of the same grass pollens such as those labeled at 1:10 w/v or 1:20 w/v or at 20,000 to 40,000 PNU. The potency of the nonstandardized extracts vary from species to species. Some nonstandardized grass pollen concentrates have been from a few thousand BAU/mL to several hundred thousand BAU/mL as measured by in vitro ELISA testing. Extracts of some lots of Greer nonstandardized glycerinated 1:20 w/v extracts such as Meadow Fescue and Redtop have tested over 200,000 BAU/mL. Two Timothy aqueous nonstandardized 1:10 w/v aqueous extract lots were over 200,000 BAU/mL. Several lots of nonstandardized concentrates of Kentucky Blue/June, Orchard, Perennial Rye, and Sweet Vernal varied around 100,000 BAU/mL. Bermuda grass is not as potent. The FDA Bermuda reference is assigned 10,000 BAU/mL, a value similar to that found in several Greer lots of nonstandardized Bermuda. This is the maximum available strength of standardized Bermuda grass pollen extract. See TABLE 3 for examples of BAU potency by in vitro ELISA testing for nonstandardized grass pollen extracts.

TABLE 3

BAU/mL of Previously Marketed, Nonstandardized, Grass Pollen Extracts BAU/mL Range by In Vitro ELISA*

Pollen	# of Lots Tested	1:10 w/v Aqueous	# of Lots Tested	1:20 w/v glycerinated
Bermuda	1	10,740	5	4,000 to14,500
Meadow Fescue	3	287,300 to 666,000	4	169,200 to 378,200
Kentucky Blue/June	3	56,100 to 145,400	4	56,100 to 91,500
Orchard	2	134,000 to 139,200	5	71,200 to 110,500
Redtop	3	141,900 to 425,000	4	134,600 to 219,200
Perennial Rye	4	59,100 to 302,000	4	52,900 to 80,400
Sweet Vernal	2	171,900 to 234,800	5	63,900 to 201,200
Timothy	3	186,300 to 291,000	3	63,000 to 104,800

Extracts testing between 67,300 and 148,600 are not statistically different from 100,000 BAU/mL. Extracts which test between 6,730 to 14,860 are not statistically different from 10,000 BAU/mL.

*CAUTION: Only a few lots of each nonstandardized pollen species have been tested by ELISA. The lots tested varied from fresh extracts to extracts more than three years old. Do not assume that these values apply to specific lots that are in distribution. In addition to age, storage temperatures influence potency.

Physicians must exercise care in switching patients from nonstandardized to standardized extracts. As with nonstandardized extracts, dosage with BAU extracts must be derived based on the patient's sensitivity to the specific pollen. Switching from an extract that was not standardized in BAU cannot be made by a calculated, numerical ratio, but TABLE 3 can be used as a guide. Dose selection can be confirmed by side-by-side testing of nonstandardized and standardized extracts at estimated equal doses. See WARNINGS section.

The potency of nonstandardized grass pollen extracts have varied enough so that the strength of any extract previously used in a specific patient cannot be related to a particular potency in switching to BAU extracts. Therefore, patients being switched from nonstandardized extracts from another manufacturer to extracts standardized in BAU can be reevaluated by diagnostic skin testing to judge the dose to start immunotherapy or to build up to new maintenance dosages.

INDICATIONS AND USAGE

Standardized Grass Pollen Extracts are indicated for the skin-test diagnosis of allergy and immunotherapy treatment of patients with a history of allergy to the respective pollen. The diagnosis of IgE-mediated allergy may be established by the allergy history, clinical evaluation, and skin test reactivity.[8,11,15] Extracts at 10,000 BAU/mL are indicated for use in scratch, prick, or puncture skin test diagnosis. Extracts at 100,000 BAU/mL are indicated for use in scratch, prick, or puncture skin test diagnosis in less sensitive subjects, such as those negative or indeterminate upon scratch, prick, or puncture testing at 10,000 BAU/mL. Extracts at 10,000 BAU/mL or 100,000 BAU/mL are indicated for intradermal skin test diagnosis only when appropriately diluted.

Immunotherapy with Standardized Grass Pollen Extracts is indicated when testing and patient history have identified the offending allergens and when it is not possible or practical to avoid these allergens.[16-18] Extracts at 10,000 BAU/mL or 100,000 BAU/mL are indicated for immunotherapy only when appropriately diluted. 10,000 BAU/mL extracts are indicated for immunotherapy on previously untreated patients. 100,000 BAU/mL extracts are indicated if a higher dose is needed.(See DOSAGE AND ADMINISTRATION) STANDARDIZED GRASS POLLEN EXTRACTS LABELED IN BAU/mL ARE NOT INTERCHANGEABLE WITH GRASS POLLEN EXTRACTS LABELED IN AU/mL OR WITH NONSTANDARDIZED GRASS POLLEN EXTRACTS. The use of Standardized Grass Pollen Extracts for the above purposes should be made only by physicians with special familiarity and knowledge of allergy. (See DOSAGE AND ADMINISTRATION)

CONTRAINDICATIONS

There are no known absolute contraindications to the use of Standardized Grass Pollen Extracts for immunotherapy. Immunotherapy with specific antigens is contraindicated in those individuals who do not exhibit skin test and clinical sensitivity to the particular antigens. (See WARNINGS and PRECAUTIONS)

Allergenic extract injections should not be administered in the presence of diseases characterized by a bleeding diathesis.

Children with nephrotic syndrome require careful consideration and probably should not receive injection therapy because a variety of seemingly unrelated events, such as immunization, can cause an exacerbation of their nephrotic disease.

General contraindications include:

EXTREME SENSITIVITY TO THE SPECIFIC ALLERGEN - Determined from previous anaphylaxis following exposure.

AUTOIMMUNE DISEASE - Individuals with autoimmune disease may be at risk, due to the possibility of routine immunizations exacerbating symptoms of the underlying disease.

WARNINGS

All concentrates of Standardized Grass Pollen Extracts are manufactured to assure high potency and have the ability during skin testing and immunotherapy to cause serious local and systemic reactions including death in extremely sensitive patients. Most reactions occur within 20 minutes after injection, but may occur later.[19] To minimize the potential for local or systemic reactions, the relative sensitivity of the patient must be assessed from the allergic history and from clinical observations. Patients should be informed of these risks prior to skin testing and immunotherapy. (See PRECAUTIONS and ADVERSE REACTIONS)

Concentrated extracts at 10,000 and 100,000 BAU/mL, must be diluted with a sterile diluent prior to use in a patient for intradermal testing or for immunotherapy.

Skin testing should be initiated only with 10,000 BAU/mL extracts. If several concentrated extracts at 100,000 BAU/mL are administered concurrently to a sensitive patient, the additive effects of cross-reacting allergens may cause a systemic anaphylactic reaction.

Allergenic extracts should be temporarily withheld from patients or the dose adjusted downward if any of the following conditions exist:

1. severe symptoms of rhinitis and/or asthma
2. infection or flu accompanied by fever
3. exposure to excessive amounts of clinically relevant allergen prior to a scheduled injection
4. evidence of a local or systemic reaction to the preceding extract injection during a course of immunotherapy

The dosage must be reduced: 1) when starting a patient on fresh extract; 2) when transferring a patient from another form of extract to a BAU standardized extract; or 3) when modifying dosages or components in a mixture or an individual prescription, even though the labeled strength of the old and new vials may be the same. This reduction in dosage may be necessary: 1) due to the previously used extract having lost potency during storage; 2) due to the fact that standardized extracts labeled in BAU/mL differ in potency in comparison to nonstandardized extracts of the same species (see TABLE 3); or 3) due to different patient sensitivity to different components. The amount of new extract given should not exceed 25% of the last dose given from the old vial, assuming both extracts contain comparable amounts of allergen. Any evidence of a local or generalized reaction requires a reduction in dosage during the initial stages of immunotherapy, as well as during maintenance therapy. The information about nonstandardized extracts shown in TABLE 3 may be helpful in confirming the appropriateness of the initial dose. When a patient is first being administered a standardized extract labeled in BAU/mL, the new dose can be selected based on a side-by-side comparison with the previously used nonstandardized extract. The availability of 10,000 BAU/mL and 100,000 BAU/mL doses is intended to facilitate safe switching by providing the physicians access to lower and higher dosages.

Patients receiving beta blocker drugs may not be responsive to beta adrenergic drugs used to treat anaphylaxis. The risks of anaphylaxis in these patients should be carefully weighed against the benefits of immunotherapy.

PRECAUTIONS

GENERAL

Not for intravenous use!

Systemic allergic reactions may occur as a result of immunotherapy. The risk can be minimized by adherence to a careful injection schedule, which starts with a low concentration of extract and is increased slowly. Because of the danger of serious reactions, caution is needed in testing exquisitely sensitive patients or patients with labile or steroid-dependent asthma. Review the patient's history of reactions to previous injections and adjust dosages accordingly.

The physician must be prepared to treat anaphylaxis should it occur and have the necessary drugs and equipment on hand to do so.[20,21,31] Extracts should not be administered by the patient or other individuals who are not prepared to treat anaphylaxis should it occur.

Patients receiving allergenic extracts should be kept under observation a minimum of twenty[20] minutes so that any adverse reaction can be observed and properly handled.[22] This time should be extended to at least 30 minutes for high-risk patients such as those with labile or steroid-dependent asthma or those suffering an exacerbation of their symptoms.[32] Airway obstruction in high risk patients can be monitored by peak flow measurements before and after administration of allergens.

Check the prescription or lot number, vial number, strength, and verify the dosage schedule of the prescription for the specific patient. Only after this verification has been made should an injection be given.

A separate, sterile syringe and needle or sterile disposable unit must be used for each patient to prevent the transmission of hepatitis or other infectious agents from person to person. Needles should not be recapped and should be disposed of properly.

Do not use the same syringe for different extracts, nor for the diluent after using it for an extract.

INFORMATION FOR PATIENTS

Most serious reactions following the administration of allergenic extracts occur within 30 minutes. The patient should remain under observation for this period of time or longer if instructed by the physician. The size of any local reaction should be recorded. Large local reactions may be indicative of subsequent systemic reactions as dosages increase. The patient should be instructed to report any unusual reactions. In particular, this includes unusual swelling and/or tenderness at the injection site or reactions such as rhinorrhea, sneezing, coughing, wheezing, shortness of breath, nausea, dizziness, or faintness. Reactions may occur some time after leaving the physician's office, in which case medical attention should be sought immediately.

DRUG INTERACTIONS

Skin test diagnosis with Allergenic Extracts may result in false negative responses when used within 3-10 days of H1 -Blockers such as cetrizine, loratadine, and terfenadine. The inhibitory effect of astemizole may last up to 60 days.[33] These products suppress histamine skin test reactions and could mask a positive response. The suppressive action of other drugs should be considered and emphasizes the need for a histamine positive-control test.

Patients receiving beta blocker drugs may not be responsive to beta adrenergic drugs used to treat anaphylaxis. The risks of anaphylaxis in these patients should be carefully weighed against the benefits of immunotherapy.

CARCINOGENESIS, MUTAGENESIS, IMPAIRMENT OF FERTILITY

There is no evidence of carcinogenicity, mutagenesis or impairment of fertility in humans from Standardized Grass Pollen Extracts. No long-term studies in animals have been performed to evaluate carcinogenic potential.

PREGNANCY

TERATOGENIC EFFECTS

PREGNANCY CATEGORY C - Animal reproduction studies have not been conducted with Standardized Grass Pollen Extracts. It is also not known whether Standardized Grass Pollen Extracts can cause fetal harm when administered to a pregnant woman or whether they can affect reproduction capacity. Standardized Grass Pollen Extracts should be given to a pregnant woman only if clearly needed.

There is no evidence of adverse effects of allergenic extracts on the fetus.[12] Studies have not been performed in animals to determine whether extracts affect fertility in males or females, have teratogenic potential, or have other adverse affects on the fetus. Caution should be exercised in testing or treating pregnant females because a systemic reaction may cause an abortion as a result of uterine muscle contractions.

LABOR AND DELIVERY

There is no known information of adverse effects during labor and delivery.

NURSING MOTHERS

It is not known whether allergenic extracts or their antigens are excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when extracts are administered to a nursing woman.

PEDIATRIC AND GERIATRIC USE

Although extracts have not been studied systematically in various age groups, older children and geriatric patients appear to tolerate injections of allergenic extracts well. Children less than five years of age on extract immunotherapy may have an increased risk of a severe reaction, but respond well to skin test diagnosis.[29] Studies with pollenosis and asthma have been conducted in children [e.g. refs. 23-25]. Extract usage in children should follow the same precautions as in adults.

ADVERSE REACTIONS

Adverse systemic reactions may occur within minutes upon use of an allergenic extract to which a person has specific sensitivity. These reactions consist primarily of allergic symptoms such as generalized skin erythema, urticaria, pruritus, angioedema, rhinitis, wheezing, laryngeal edema, and hypotension. Less commonly, nausea, emesis, abdominal cramps, diarrhea and uterine contractions may occur. Systemic reactions occur with varying frequency in different clinics and are usually less than 1%. To some extent, the reaction rate is related to the type and dose of administered extract and to the degree of sensitivity of the patient. Severe reactions may cause shock and loss of consciousness. Fatalities have occurred rarely.[12,26,27] Fatal reactions are often associated with high-risk patients such as those with labile or steroid-dependent asthma, particularly in those suffering an exacerbation of their symptoms at the time of extract administration. In general, immunotherapy with allergenic extracts is considered to be safe.[28] Despite all precautions occasional reactions are unavoidable.

Adverse systemic / anaphylactic reactions should be treated as follows:

A. If the injection site is an arm, a tourniquet should be immediately applied above the site. Release the tourniquet every few minutes for a few seconds.
B. Epinephrine 1:1000 should be injected immediately in the opposite arm in amounts of 0.3 to 0.5 mL and 0.2 mL epinephrine should be administered at the site of injection. For children below the age of 6 years, adjust the initial dose of epinephrine to 0.005 mL per pound (0.01 mL/kg) of body weight. Repeat epinephrine dosage in 15 minutes if necessary and if symptoms persist.
C. Adverse reactions not responding to epinephrine therapy may require other measures such as the use of inhaled, parenteral bronchodilators, vasopressors, oxygen, or volume replacement therapy. Proper equipment and trained personnel should be available.[20,21,31]

Local reactions consisting of erythema, itching, swelling, tenderness and sometimes pain may occur at the injection site. These reactions may appear within a few minutes to hours and persist for several days. Local cold applications and oral antihistamines may be effective treatment. For marked and prolonged local reactions, steroids may be helpful.

Reporting of Adverse Events

Reporting of serious or unexpected adverse events occurring after extract administration is encouraged. MedWatch Forms, FDA Form 3500, are available from FDA, 1-800-332-1088. Health-care providers also should report these events to the Regulatory Affairs adverse reaction monitor, Greer, P.O. Box 800, Lenoir NC 28645-0800 or call 1-800-438-0088.

OVERDOSAGE

Systemic reactions are uncommon after injection, but if the patient receives more extract than can be tolerated at that particular time and begins to experience immediate hypersensitivity anaphylaxis, the procedures listed under ADVERSE REACTIONS should be instituted.

Overdosage may occur because of an error in the volume of extract injected, an incorrect dilution injected, or because the patient may be exposed to airborne or environmental antigens simultaneously with injection of the same antigens. In the event of a systemic reaction occurring, the dosage schedule should be carefully reviewed and if necessary adjusted as outlined above under WARNINGS.

DOSAGE AND ADMINISTRATION

1. DIAGNOSTIC TESTING

For the patient with a suspected diagnosis of allergy to more than one antigen, initial screening skin tests should include the individual extracts. If a screening skin test with a mixture is used, a positive response should be followed by testing with the individual extracts to determine the degree of sensitivity to each and to guide in the selection of extracts and their concentration for immunotherapy if indicated. However, because a negative skin test with a mixture may not be indicative of the absence of allergy to one or more of the components due to their

dilution, testing with individual extracts is more precise. False negative responses may occur if serum levels of antihistamines remain from prior medication administration. (See PRECAUTIONS) The use of a histamine positive control is especially recommended for patients on prior medications which may decrease the histamine skin test response.

Skin tests read after 15 to 20 minutes are graded in terms of the induration (wheal) and erythema (flare) response compared to the appropriate controls. Wheal and flare sizes may be recorded by actual measurements. The largest diameter of the wheal and flare may be recorded, or the sum of the largest diameter and the orthogonal (right angle) diameter wheal or flare may be used as in the studies in TABLE 1 and TABLE 2.

Scratch or Prick-puncture Skin Testing:
For puncture, prick, or scratch skin test, the 10,000 BAU/mL strength is recommended and will detect the more sensitive patients. Inconclusive results at 10,000 BAU/mL may be followed by a puncture, prick, or scratch skin test at 100,000. At the higher concentration, some nonspecific positives may occur.

Controls for Scratch, Prick-Puncture Testing:
As a positive control, glycerinated histamine phosphate 5 mg/mL (1.8 mg/mL histamine base) or aqueous histamine phosphate 2.75 mg/mL (1 mg/mL (1:1,000 w/v) histamine base) may be used as a positive control. A 50% glycerosaline solution may be used as the negative control.

Intradermal Skin Testing:
Extracts for intradermal testing must be prepared by diluting the concentrated extract with sterile diluent (such as normal or buffered saline, or normal saline with human serum albumin).

Intradermal skin tests with eight U.S. reference extracts (TABLE 2) indicate that a calculated dose of 0.02 BAU/mL should yield an average sum of erythema reaction of 50 mm, as tested in subjects with similar puncture reactivities described in TABLE 1 to that specific grass pollen extract. However in the more sensitive subjects, the dose was as low as 0.0003 BAU for one grass to 0.002 BAU for several others. Conversely, doses of from 0.1 to 1.9 BAU were calculated to yield the same reaction in the least-sensitive subjects.

Controls for Intradermal Testing:
As a positive control, use glycerinated histamine phosphate diluted to 0.5 mg/mL (0.18 mg/mL histamine base) or aqueous histamine phosphate 0.275 mg/mL (0.1 mg/mL histamine base). As a negative control, use 0.5% to 1% glycerin in 0.9% saline.

A. Patients with a negative scratch or prick-puncture test:
Patients who do not react to a scratch or prick-puncture test should be tested intradermally, using a 26 or 27 gauge 1/4 inch needle, with 0.02 to 0.05 mL of a 50 BAU/mL extract dilution. A negative test should be followed by repeat tests using progressively stronger concentrations until significant wheal and flare reaction sizes are attained or until the maximum

recommended strength of 200 BAU/mL is reached. As a positive control, use glycerinated histamine phosphate diluted to 0.5 mg/mL (0.18 mg/mL histamine base) or aqueous histamine phosphate 0.275 mg/mL (0.1 mg/mL histamine base). As a negative control use 0.5% to 1% glycerosaline solution.

B. Patients tested only by the intradermal method:
Since highly reactive individuals may react intracutaneously at doses even smaller than indicated above, it is recommended that intradermal testing be preceded by a puncture test and the dose adjusted accordingly. Other patients suspected of being moderately allergic may be tested with an intradermal test dose of 0.02 to 0.05 mL of a 0.05 BAU/mL dilution. A negative test should be followed by repeat tests using progressively stronger concentrations until the maximum recommended strength of 200 BAU/mL is reached. As a negative control use 0.5% to 1% glycerosaline solution. As a positive control, use glycerinated histamine phosphate diluted to 0.5 mg/mL (0.18 mg/mL histamine base) or aqueous histamine phosphate 0.275 mg/mL (0.1 mg/mL histamine base).

2. THERAPY

Standardized versus Nonstandardized Extracts:
Dosage with extracts standardized in BAU must be derived from a knowledge of the patient's sensitivity to the specific pollen. Switching from an extract not standardized in BAU cannot be made by a calculated ratio. There are no equivalent dosages in bioequivalent allergy units applicable to all the grass species that can be related to previously marketed nonstandardized extracts labeled in weight-to-volume (w/v), Protein Nitrogen Units (PNU), or Allergy Units (AU). The information about nonstandardized extracts shown in TABLE 3 may be helpful in selecting the initial dose for the side-by-side skin test comparison. Patients being switched from nonstandardized extracts to extracts standardized in BAU can be reevaluated by diagnostic skin testing to judge the dose for starting immunotherapy or building up to new maintenance dosages. When a patient is first being administered a standardized extract labeled in BAU/mL, the new dose can be selected based on a side-by-side comparison with the previously used nonstandardized extract.

Immunotherapy is administered by subcutaneous injection. Dosage is individualized according to the patient's sensitivity, the clinical response, and tolerance to the extract administered during the early phases of an injection regimen. Extracts for immunotherapy must be prepared by diluting the concentrate with sterile diluent (such as normal or buffered saline, or normal saline with human serum albumin).

The initial dose of an extract in BAU should be calculated based on the puncture test reactivity. Note in TABLE 1 and TABLE 2 the puncture and intradermal skin test reactivity of sensitive subjects evaluated with the US reference extracts.

The initial dose of the extract may be as low as 0.1 mL of a 0.005 to 0.05 BAU/mL dilution (0.0005 to 0.005 BAU) (dilution 5 or 6 in TABLE 4 below) or even less for the exquisitely sensitive patient. Patients with lesser sensitivity may be started at 0.1 mL of a 0.5 to 5 BAU/mL dilution (0.05 to 0.5 BAU).

The amount of allergenic extract is increased at each injection by no more than 50% of the previous amount, and the next increment is governed by the response to the last injection. Large local reactions which persist for longer than 24 hours are generally considered an indication for repeating the previous dose or reducing the dose at the next administration. Any evidence of systemic reaction is an indication for a reduction of 75% in the subsequent dose. The upper limits of dosage in BAU have not been established. Doses larger than 0.2 mL of an extract in 50% glycerin may cause discomfort upon injection. The dosages of allergenic extracts do not vary significantly with the allergic disease under treatment.

To prepare dilutions starting from a 100,000 BAU/mL concentrate, proceed as in TABLE 4. The 50,000 BAU/mL concentrate can be made by using equal parts of the 100,000 BAU/mL extract and the sterile diluent. The ten-fold dilution series uses 0.5 mL of concentrate to 4.5 mL of sterile diluent with additional dilutions made in the same manner.

TABLE 4

Ten-Fold Dilution Series*

Dilution	Extract	Diluent	BAU/mL	BAU/mL
0	Concentrate		100,000	10,000
1	0.5 mL concentrate	4.5 mL	10,000	1,000
2	0.5 mL dilution 1	4.5 mL	1,000	100
3	0.5 mL dilution 2	4.5 mL	100	10
4	0.5 mL dilution 3	4.5 mL	10	1
5	0.5 mL dilution 4	4.5 mL	1	0.1
6	0.5 mL dilution 5	4.5 mL	0.1	0.01

*Due to differences such as source material, preservative, potency dilutions, storage conditions, and length of storage, there is no common potency correlation ratio between extracts standardized in Bioequivalent Allergy Units (BAU) and: 1) standardized extracts previously labeled in Allergy Units (AU); 2) nonstandardized extracts labeled weight-to-volume (w/v); 3) nonstandardized extracts labeled in Protein Nitrogen Units (PNU); or 4) alum-precipitated extracts.

The optimal interval between doses of allergenic extracts has not been established. Injections usually are given 1 or 2 times per week until the maintenance dose is reached. The injection interval is then increased to 2 weeks, then to 3 weeks and finally to 4 weeks. If the patient does not return for 6 to 8 weeks, the dose should be reduced to 25% of the last dose. If longer than 8 weeks, a dose reduction of one, two or three dilutions may be made considering the components and the patient's sensitivity. The dosage and the interval between injections may need to be modified according to the clinical response of the patient. When switching patients to fresh extract, the initial dose should be reduced to 25% of the previous dose.

The usual duration of treatment has not been established. A period of two or three years of injection therapy constitutes an average minimum course of treatment.

Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration, whenever solution and container permit. Some concentrated extracts naturally develop a cloudy appearance over time under refrigeration, the material settling to the bottom on standing.

HOW SUPPLIED

Stock concentrate extracts containing 10,000 BAU/mL and 100,000 BAU/mL are supplied in 10, 30 and 50 mL multiple-dose vials in 50% glycerin. (Standardized Bermuda grass pollen extract is supplied at a maximum strength of 10,000 BAU/mL.) Extracts for puncture, prick or scratch testing are supplied in 5 mL dropper vials at 10,000 BAU/mL or in multiple-dose vials at 100,000 BAU/mL (except Bermuda) in 50% glycerin. Intradermal strengths should be prepared by dilution of stock concentrates with normal saline or saline containing HSA.

STORAGE

All allergenic extracts should be stored at 2-8°C and kept in this temperature range during office use. Refer to vial labels for expiration dates. Clinicians should be aware that diluted extracts are inherently less stable than concentrates. Dilutions of glycerinated extracts which result in glycerin below 50% may also be less stable. Potency of a particular dilution can be checked by skin test in comparison to a fresh dilution of the extract on an individual known to be allergic to the specific antigen.

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ALLERGENIC EXTRACTS

STANDARDIZED CAT HAIR EXTRACT

Suggested Dosage Schedule
and Instructions

WARNING

THIS ALLERGENIC PRODUCT IS INTENDED FOR USE BY PHYSICIANS WHO ARE EXPERIENCED IN THE ADMINISTRATION OF ALLERGENIC EXTRACTS AND THE EMERGENCY CARE OF ANAPHYLAXIS, OR FOR USE UNDER THE GUIDANCE OF AN ALLERGY SPECIALIST.

STANDARDIZED CAT HAIR EXTRACT WITH POTENCY LABELING IN BIOEQUIVALENT ALLERGY UNITS per mL (BAU/mL) IS NOT INTERCHANGEABLE WITH OTHER CAT EXTRACTS. STANDARDIZED CAT HAIR EXTRACT IS NOT INTERCHANGEABLE WITH STANDARDIZED CAT PELT EXTRACTS LABELED IN BIOEQUIVALENT ALLERGY UNITS OR WITH OTHER CAT EXTRACTS LABELED IN ALLERGY UNITS (AU).

THE INITIAL DOSE OF STANDARDIZED CAT HAIR EXTRACT MUST BE BASED ON SKIN TESTING AS DESCRIBED IN THE DOSAGE AND ADMINISTRATION SECTION OF THIS INSERT. PATIENTS BEING SWITCHED FROM OTHER TYPES OF EXTRACTS TO STANDARDIZED CAT HAIR EXTRACT SHOULD BE INSTRUCTED TO RECOGNIZE ADVERSE REACTION SYMPTOMS AND CAUTIONED TO CONTACT THE PHYSICIAN'S OFFICE IF REACTION SYMPTOMS OCCUR. IN CERTAIN INDIVIDUALS THESE REACTIONS COULD BE FATAL. PATIENTS SHOULD BE OBSERVED FOR AT LEAST 20 MINUTES FOLLOWING IMMUNOTHERAPY. PATIENTS WITH LABILE OR STEROID-DEPENDENT ASTHMA ARE "HIGH RISK PATIENTS" WHO REQUIRE SPECIAL CAUTION IN DOSE ADMINISTRATION AND SHOULD REMAIN IN THE OFFICE FOR AT LEAST 30 MINUTES. AIRWAY OBSTRUCTION IN HIGH RISK PATIENTS CAN BE MONITORED BY PEAK FLOW MEASUREMENTS BEFORE AND AFTER ADMINISTRATION OF ALLERGENS. EMERGENCY MEASURES AS WELL AS PERSONNEL TRAINED IN THEIR USE SHOULD BE IMMEDIATELY AVAILABLE IN THE EVENT OF A LIFE THREATENING REACTION. PATIENTS BEING SWITCHED FROM ONE LOT OF EXTRACT TO ANOTHER FROM THE SAME MANUFACTURER SHOULD HAVE THEIR DOSE REDUCED BY 75%.

RISK OF ANAPHYLAXIS SHOULD BE WEIGHED AGAINST BENEFITS IN IMMUNOTHERAPY: IN PATIENTS RECEIVING BETA BLOCKERS AS THEY MAY NOT BE RESPONSIVE TO BETA ADRENERGIC DRUGS SHOULD ANAPHYLAXIS OCCUR; IN PATIENTS WITH UNSTABLE OR STEROID-DEPENDENT ASTHMA; OR IN PATIENTS WITH CARDIOVASCULAR DISEASE.

THIS PRODUCT SHOULD NOT BE INJECTED INTRAVENOUSLY.

REFER ALSO TO THE WARNINGS, PRECAUTIONS, ADVERSE REACTIONS AND OVERDOSAGE SECTION BELOW.

DESCRIPTION

Each vial contains a sterile extract of cat (*Felis domesticus*) pelt and cat dander, 0.50% sodium chloride, 0.25% sodium bicarbonate, 50% glycerin by volume, and 0.4% phenol as a preservative. Source materials for the extract are dry cat dander and dry defatted cat pelt.

Standardized Cat Hair Extract is a sterile solution for intracutaneous or subcutaneous administration. The extract is standardized by comparing potency in cat allergen 1 (*Fel d* I) units measured by radial immunodiffusion against a reference

standard from the Center for Biologics Evaluation and Research of the U.S. Food and Drug Administration (FDA).[1-3] An extract with 10 to 19.9 *Fel d* I units per mL is designated as 10,000 Bioequivalent Allergy Units/mL (BAU/mL) by the FDA based on quantitative skin testing.[2] Greer Standardized Cat Hair Extract concentrate is 10,000 BAU/mL.

Cat albumin is considered to be a minor allergen, but may be significant for certain patients.[4] *Fel d* I is a relatively stable component while albumin is more labile and more easily destroyed by heat.[5-6] For lot release, Standardized Cat Hair Extract is compared to FDA reference by isoelectric focusing (IEF) to differentiate it from Cat Pelt Extract.

CLINICAL PHARMACOLOGY

The allergic reaction is dependent upon the presence of antigen-specific IgE antibodies that are bound to specific receptors on mast cells and basophils and has been demonstrated for cat-allergic individuals.[7] The presence of IgE antibodies on mast cells and basophils sensitizes these cells and upon interaction with the appropriate allergen-histamine and other mediators are released.[8] In the skin these mediators are responsible for the characteristic wheal and flare reaction.[9]

An increase in cat antigen-specific IgG antibodies has been demonstrated as a result of immunotherapy.[10-11] The complete mechanisms of immunotherapy are not known and are still under investigation.

Immunotherapy with cat extract has been studied by several investigators. It is generally believed that hyposensitization with this product is helpful in reducing allergic symptoms associated with exposure to cat allergens in homes or the environment.[12-16]

INDICATIONS AND USAGE

Standardized Cat Hair Extract is indicated for the diagnosis and treatment (immunotherapy) of patients with a history of allergy to cats. The diagnosis of cat allergy is established by the allergy history, clinical evaluation, and skin test reactivity. Cat emanations are common causes of allergy and occur not only upon direct exposure to cats, but also occur in high levels in house dust and other environmental dusts.[17] Persons suspected of having allergy to house dust should be tested for sensitivity to cat allergens. Immunotherapy is indicated when cat allergy is established and the patient cannot avoid exposure to cat allergens.

The use of cat extract for the above purposes should be made only by physicians with special familiarity with and knowledge of allergy. (SEE DOSAGE AND ADMINISTRATION)

CONTRAINDICATIONS

There are no known absolute contraindications to the use of Allergenic Extracts for immunotherapy. Immunotherapy with cat antigens is contraindicated in those individuals who do not exhibit skin test or clinical sensitivity to cat antigens. (See below under WARNINGS AND PRECAUTIONS)

Cat extract injections should not be administered in the presence of diseases characterized by a bleeding diathesis.

Children with nephrotic syndrome require careful consideration and probably should not receive injection therapy because a variety of seemingly unrelated events, such as immunization, can cause an exacerbation of their nephrotic disease.

Other contraindications include:

EXTREME SENSITIVITY TO CAT - Determined from previous anaphylaxis following skin testing.

AUTOIMMUNE DISEASE - Individuals with autoimmune disease may be at risk, due to the possibility of routine immunizations exacerbating symptoms of the underlying disease.

WARNINGS

Please also refer to warning box at beginning of package insert.

Concentrated extracts must be diluted with sterile diluent prior to first use on a patient for immunotherapy or intradermal testing. All concentrates of allergenic extracts are manufactured to assure high potency and therefore have the ability during skin testing and immunotherapy to cause serious local and systemic reactions including death in sensitive patients. Most reactions occur within 20 minutes after injection,[18] but may occur later.[19] To minimize the potential for local or systemic reactions, the relative sensitivity of the patient must be assessed from the allergic history and from clinical observations. Patients should be informed of this and the precautions should be discussed prior to immunotherapy (see PRECAUTIONS below).

Standardized Cat Hair Extract labeled in Bioequivalent Allergy Units is not interchangeable with Standardized Cat Pelt Extract or with cat extracts labeled in Allergy Units. Patient doses stated or calculated in Allergy Units should not be confused with Bioequivalent Allergy Units because the BAU is ten times as potent as the Allergy Unit used for cat extracts before September 1992.

The dosage must be reduced when starting a patient on fresh Standardized Cat Hair Extract or when transferring a patient from any other cat extract product to Standardized Cat Hair Extract (even though the labeled strength of the old and new vials may be the same). This reduction in dosage may be necessary due to a loss of extract potency during storage in the physician's office. **The cat allergen content of old and new extracts must be compared and adjusted by dosage reduction and/or dilution before the new extract is administered**. The amount of new extract given should not exceed 25% of the last dose given from the old vial, assuming both extracts contain comparable amounts of cat allergens. Any evidence of a local or generalized reaction requires a reduction in dosage during the initial stages of immunotherapy, as well as during maintenance therapy.

Allergenic extracts should be temporarily withheld from patients or the dose adjusted downward if any of the following conditions exist:

(1) severe symptoms of rhinitis and/or asthma

(2) infection or flu accompanied by fever

(3) exposure to excessive amounts of clinically relevant allergen prior to a scheduled injection.

Risk of anaphylaxis should be weighed against benefits of immunotherapy: in patients receiving beta blockers as they may not be responsive to beta adrenergic drugs should anaphylaxis occur; in patients with unstable or steroid-dependent asthma; or in patients with cardiovascular disease.

Not for intravenous use!

PRECAUTIONS

GENERAL:

Systemic allergic reactions may occur as a result of immunotherapy. The risk can be minimized by adherence to a careful injection schedule, which starts with a low concentration of extract and is increased slowly. The physician must be prepared to treat anaphylaxis should it occur and have the necessary drugs and equipment on hand to do so.[20] Extracts should not be administered by the patient or other individuals who are not prepared to treat anaphylaxis should it occur.

Patients receiving allergenic extracts should be kept under observation a minimum of 20 minutes so that any adverse reaction can be observed and properly handled. This time should be extended to at least 30 minutes for high-risk patients such as those with labile or steroid-dependent asthma or those suffering an exacerbation of their symptoms.[24] Airway obstruction in high risk patients can be monitored by peak flow measurements before and after administration of allergens.

Check the prescription or lot number, vial number, strength, and verify the dosage schedule of the prescription for the specific patient. Only after this verification has been made should an injection be given.

A separate, sterile syringe and needle or sterile disposable unit must be used for each patient to prevent the transmission of hepatitis or other infectious agents from person to person. Needles should not be recapped and should be disposed of properly.

Do not use the same syringe for different extracts, nor for the diluent after using it for an extract.

INFORMATION FOR PATIENTS:

Most serious reactions following the administration of allergenic extracts occur within 20 minutes; the patient should remain under observation for this period of time or longer if instructed by the physician.[18] The size of the local reaction should be recorded, because increasingly large local reactions may precede a subsequent systemic reaction with increasing dosage. In particular, this includes unusual swelling and/or tenderness at the injection site or reactions such as shortness of breath, rhinorrhea, sneezing, coughing, wheezing, nausea, dizziness or faintness. Reactions may occur some time after leaving the physician's office, in which case medical attention should be sought immediately.

The patient should be instructed to report any unusual reactions to the physician.

DRUG INTERACTIONS:

Skin test diagnosis with Allergenic Extracts may result in false negative responses when used within 3-10 days of H_1 -Blockers such as cetrizine, loratadine, and terfenadine. The inhibitory effect of astemizole may last up to 60 days.[25] These products suppress histamine skin test reactions and could mask a positive response.

The suppressive action of other drugs such as tricyclic antidepressants or topical steroids should be considered and emphasizes the need for a histamine positive-control test.

Patients receiving beta blocker drugs may not be responsive to beta adrenergic drugs used to treat anaphylaxis. The risks of anaphylaxis in these patients should be carefully weighed against the benefits of immunotherapy.

CARCINOGENESIS, MUTAGENESIS, IMPAIRMENT OF FERTILITY

There is no evidence of carcinogenicity, mutagenesis or impairment of fertility in humans from allergenic extracts. No long-term studies in animals have been performed to evaluate carcinogenic potential.

PREGNANCY

PREGNANCY CATEGORY C - Animal reproduction studies have not been conducted with cat extract. It is also not known whether cat extract can cause fetal harm when administered to a pregnant woman or whether it can affect reproduction capacity. Cat extract should be given to a pregnant woman only if clearly needed.

There is no evidence of adverse effects of allergenic extract on the fetus. Studies have not been performed in animals to determine whether this extract affects fertility in males or females, has teratogenic potential, or has other adverse affects on the fetus. Caution should be exercised in testing or treating pregnant females because a systemic reaction may cause an abortion as a result of uterine muscle contractions.

LABOR AND DELIVERY

There is no known information of adverse effects during labor and delivery.

NURSING MOTHERS

It is not known whether this product is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when extracts are administered to a nursing woman.

PEDIATRIC AND GERIATRIC USE:

Although standardized cat extract has not been well-studied in children, children and geriatric patients appear to tolerate injections of allergenic extract well. Use in children under six years of age is not recommended. Cat extracts have been administered to children with adverse systemic responses occurring only when given in doses sufficiently high to induce an immediate hypersensitivity reaction.[14-15]

ADVERSE REACTIONS

SYSTEMIC REACTIONS

Adverse systemic reactions may occur within minutes with any allergenic extract, including cat. These reactions consist primarily of allergic symptoms such as generalized skin erythema, urticaria, pruritus, angioedema, rhinitis, wheezing, laryngeal edema and hypotension. Less commonly, nausea, emesis, abdominal cramps, diarrhea and uterine contractions may occur. Severe reactions may cause shock and loss of consciousness. Fatalities with allergenic extracts have occurred rarely. [21] Anaphylaxis and deaths following the subcutaneous injection of extracts have also been

reported by the British Committee on Safety of Medicine.[22] Systemic reactions occur with varying frequency in different clinics and are usually less than 1%. To some extent, the reaction rate is related to the type and dose of administered extract and to the degree of sensitivity of the patient. In general, immunotherapy with allergenic extracts is considered to be safe. [23] Despite all precautions, occasional reactions are unavoidable.

Adverse reactions should be treated as follows:

A. A tourniquet should be immediately applied to the extremity above the site of injection. Release the tourniquet every few minutes for a few seconds.

B. Epinephrine 1:1000 should be injected immediately in the opposite arm in amounts of 0.3 to 0.5 mL and 0.2 mL epinephrine should be administered at the site of injection. For children below the age of 6 years, adjust the dosage of epinephrine to 0.005 mL per pound of body weight per dose. Repeat epinephrine dosage in 15 minutes if necessary and if symptoms persist.

C. Adverse reactions not responding to epinephrine therapy may require the use of parenteral bronchodilators, vasopressors, oxygen, or volume replacement therapy.

LOCAL REACTIONS

Local reactions consisting of erythema, itching, swelling, tenderness and sometimes pain may occur at the injection site. These reactions may appear within a few minutes to hours and persist for several days. Local cold applications and oral antihistamines may be effective immunotherapy. For marked and prolonged local reactions, steroids may be helpful.

OVERDOSAGE

Systemic reactions are uncommon after injection, but if the patient receives more extract than can be tolerated at that particular time, the procedures listed under ADVERSE REACTIONS should be instituted.

Overdosage may occur because of an error in the volume of extract injected, or an incorrect dilution injected, or because the patient may be exposed to airborne or environmental antigens simultaneously with injection of the same antigens. In the event of a systemic reaction occurring, the dosage schedule should be carefully reviewed and if necessary adjusted as outlined above under WARNINGS.

DOSAGE AND ADMINISTRATION

GENERAL

Concentrated standardized cat hair extracts should be diluted prior to intradermal testing or first use in immunotherapy.

Normal or buffered saline or normal saline with human serum albumin may be used to prepare appropriate dilutions. Vials should be visually inspected to ensure particulate free prior to use.

DIAGNOSTIC TESTING

For the patient with a suspected diagnosis of cat allergy, initial testing may be conducted with the concentrate by means of a puncture test employing a multiple puncture device or other appropriate instrument. Prick testing through a drop of extract or scratch testing with a drop of extract applied to the scratch may also be employed to

determine the degree of sensitivity. If the response is negative, this initial test may be followed by intradermal testing where the clinical history is strongly indicative of allergy to cats. Use of a positive and negative control is recommended.

The most frequently used test sites are the back and the volar surface of the forearms. The skin should be cleansed with alcohol and allowed to dry. A minimum of at least 1 inch should be allowed between test sites. A marking pencil may be used to indicate the site locations.

Skin tests read after 15 to 20 minutes are graded in terms of the induration (wheal) and erythema (flare) response compared to the appropriate controls. Wheal and flare sizes may be recorded by actual measurements. The largest diameter of the wheal and flare may be recorded, or the sum of the largest diameter and the orthogonal (right angle) diameter wheal or flare may be used.

Puncture, prick or scratch testing:

The skin test concentration of 10,000 BAU/mL is used for puncture, prick or scratch testing. Puncture tests with Standardized Cat Hair Extract performed on ten highly sensitive cat puncture-positive patients showed a mean diameter wheal of 6.0 mm $\pm$ 2.2 mm and a mean erythema of 36.7 mm $\pm$ 6.7 mm. Glycerinated histamine phosphate 5 mg/mL (1.8 mg/mL histamine base) or aqueous histamine phosphate 2.75 mg/mL (1 mg/mL histamine base; 1:1000 w/v) may be used as a positive control. A 50% glycerosaline solution may be used as the negative control.

A sterile puncture device, needle, scalpel blade, or scarifier is used. A separate sterile device must be used for each patient to prevent transmission of infectious agents. If the device contacts extracts, use a separate device for each antigen to prevent cross-contamination.

The skin is abraded only enough to enter the dermis without drawing blood. Follow the directions for the device being used. The antigen may be applied directly with a puncture device or is introduced by applying a drop of extract to the scratch or prick site, taking care not to touch the skin with the dropper tip.

Intradermal testing:

Extract for intradermal testing must be prepared by diluting the stock concentrate with sterile diluent (use normal or buffered saline or normal saline with human serum albumin) or obtained by ordering the appropriate dilutions ready made. As a positive control, use glycerinated histamine phosphate diluted to 0.5 mg/mL (0.18 mg/mL histamine base) or aqueous histamine phosphate 0.275 mg/mL (0.1 mg/mL histamine base). As a negative control, use 0.5% to 1% glycerosaline solution.

Intradermal skin tests with 0.05 mL of three-fold serial dilutions in ten highly sensitive cat puncture test positive (sum of erythema >57 mm) persons showed the results in Table I:

TABLE I

BAU/mL to Elicit 50mm
Sum of Diameter Erythema Reaction

Geometric Mean	Range
0.0542	0.0050 - 0.4809

Intradermal extract is used as follows:

a. Patients with a negative scratch or prick-puncture test:

Patients who do not react to a scratch or prick-puncture test should be tested intradermally with 0.02 to 0.05 mL of a 50 BAU/mL extract dilution. If this test is negative, a second intradermal test may be performed using a 200 BAU/mL extract dilution.

b. Patients tested only by the intradermal method:

Since highly reactive individuals may react intracutaneously at 1:1 million or even 1:10 million dilutions, any intradermal injection should be preceded and the dose adjusted according to puncture test reactivity. Other patients suspected of being moderately allergic may be tested with an intradermal test dose of 0.02 to 0.05 mL of a 0.05 BAU/mL dilution. A negative test should be followed by repeat tests using progressively stronger concentrations until the maximum recommended strength of 200 BAU/mL is reached.

Skin tests are graded in terms of the wheal and erythema response noted at 15 to 20 minutes. Wheal and erythema size may be recorded by actual measurement of the extent of both responses.

IMMUNOTHERAPY

Immunotherapy is administered by subcutaneous injection. **Not for intravenous use!**

Dosage of allergenic extracts is individualized according to the patient's sensitivity, the clinical response, and tolerance to the extract administered during the early phases of an injection regimen. The initial dose of the extract should be calculated based on the puncture test reactivity. The initial dose of the extract may be as low as 0.1 mL of a 0.005 to 0.05 BAU/mL dilution (dilution 5 or 6 in Table II below) or even less for the exquisitely sensitive patient. Patients with lesser sensitivity may be started at 0.1 mL of a 0.5 to 5 BAU/mL dilution. The amount of allergenic extract is increased at each injection by no more than 50% of the previous amount; the next increment is governed by the response to the last injection. Large local reactions which persist for longer than 24 hours are generally considered an indication for repeating the previous dose or reducing the dose. Any evidence of systemic reaction is an indication for a significant reduction (at least 50%) in the subsequent dose. The upper limits of dosage have not been established; however, doses larger than 0.2 mL of 5,000 BAU/mL may cause discomfort upon injection because of the high glycerin content. The dosage of allergenic extract does not vary significantly with the respiratory allergic disease under treatment.

To prepare dilutions for intradermal and therapeutic use starting from a 5,000 or 10,000 BAU/mL stock concentrate proceed as follows: (Note add 1 mL of concentrate to 9.0 mL of sterile diluent and make additional dilutions in the same manner.)

TABLE II

Dilution	Extract	Diluent	BAU/mL	
0	Concentrate		5,000	10,000
1	1 mL concentrate	9.0	500	1,000
2	1 mL dilution 1	9.0	50	100
3	1 mL dilution 2	9.0	5	10
4	1 mL dilution 3	9.0	0.5	1.0
5	1 mL dilution 4	9.0	0.05	0.1
6	1 mL dilution 5	9.0	0.005	0.01

The optimal interval between doses of allergenic extract has not been definitely established. However, as is customarily practiced, injections are given 1, 2 or 3 times per week until the maintenance dose of extract is reached. At this time, the injection interval is increased to 2 weeks, then to 3 weeks and finally to 4 weeks. If the patient does not return for 6 to 8 weeks after the last injection, the dose should be reduced to 25% of the last dose. If longer than 8 weeks, a dose reduction of one, two or three dilutions may be made depending on a consideration of the components and the patient's sensitivity. The dosage and the interval between injections may need to be modified according to the clinical response of the patient. When switching patients to fresh extract, the initial dose should be reduced to one-quarter of the previous dose.

The usual duration of immunotherapy has not been established. A period of two or three years of injection therapy constitutes an average minimum course of treatment.

HOW SUPPLIED

Stock concentrate extract containing 10,000 Bioequivalent Allergy Units per mL (10,000 BAU/mL) in 50% glycerin v/v or other dilutions as requested by the physician are supplied in 5, 10, 30 and 50 mL vials. Cat extracts are also supplied in 5 mL dropper vials for puncture, prick or scratch testing. All dilutions of cat extracts are supplied in 50% Glycero-Coca's solution.

STORAGE

Standardized Cat Hair Extract should be stored at 2-8 degrees C and kept at this temperature range during office use. Refer to vial label for expiration date of concentrated extract. Dilutions should not be used past the expiry dating on the concentrate. Dilutions of concentrated extract result in a glycerin content of less than 50% which is less stable, particularly for the serum component. Potency of the dilution can be checked by skin test in comparison to a fresh dilution of the extract on a known cat allergic individual.

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HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use Greer Standardized Mite Extracts safely and effectively. See full prescribing information for Greer Standardized Mite Extracts.
Standardized Mite Extract (*Dermatophagoides farinae*)
Standardized Mite Extract (*Dermatophagoides pteronyssinus*)
Standardized Mite Extract Mixture (*Dermatophagoides farinae* and *Dermatophagoides pteronyssinus*)
Solution for percutaneous, intradermal, or subcutaneous administration.
Initial U.S. Approval: 1987

WARNING: ANAPHYLAXIS
See full prescribing information for complete boxed warning
- **Do not inject intravenously (2.2)**
- **Allergenic extracts may cause severe life-threatening systemic reactions, including the rare occurrence of anaphylaxis or death (5.1)**
- **Intended for use only by experts experienced in administering allergic extracts and trained to provide emergency treatment (5.1)**
- **Initial dose must be based on skin test (2.1)**
- **Observe patients in the office for at least 30 minutes following treatment. Emergency measures and personnel trained in their use must be available immediately in the event of life threatening reaction (5.1)**
- **Immunotherapy may not be suitable for patients with medical conditions that reduce their ability to survive a systemic reaction (5)**

----------INDICATIONS AND USAGE----------
Greer Standardized Mite Extracts are allergenic extracts indicated for
- Diagnosis of skin test reactivity to dust mite allergen (1)
- Treatment of mite-induced allergic asthma, rhinitis and conjunctivitis in patients that show hypersensitivity to dust mites based on clinical history, allergen exposure history, and skin test reactivity (1)

----------DOSAGE AND ADMINISTRATION----------
The extracts are diluted with sterile diluents for allergenic extracts when used for intradermal testing or subcutaneous immunotherapy. Dosages vary by mode of administration, and by individual response and tolerance.
- Administered percutaneously for diagnostic testing (2.1); stock concentrate 10,000 Allergy Units/mL (2.1)
- Administered intradermally for diagnostic testing (2.1); stock concentrate 5,000, 10,000, or 30,000 Allergy Units/mL (2.3)
- Administered subcutaneously for immunotherapy (2.2); stock concentrate of 5,000, 10,000, or 30,000 Allergy Units/ mL (2.3)

----------DOSAGE FORMS AND STRENGTHS----------
- For percutaneous testing, Greer Standardized Mite Extract stock concentrates containing 10,000 Allergy Units/mL of *Dermatophagoides farinae (D. farinae), Dermatophagoides pteronyssinus (D. pteronyssinus)*, or both *D. farinae* and *D. pteronyssinus* are supplied in 5 mL dropper vials (3)
- For intradermal testing or immunotherapy, Greer Standardized Mite Extracts stock concentrates containing a total of 5,000, 10,000, or

30,000 Allergy Units/mL of *D. farinae, D. pteronyssinus*, or a mixture of *D. farinae* and *D. pteronyssinus* are supplied in 10, 30, and 50 mL multiple-dose vials (3)

----------CONTRAINDICATIONS----------
None

----------WARNINGS AND PRECAUTIONS----------
All concentrates of Greer Standardized Mite Extracts can cause serious systemic reactions of varying degrees of severity, including anaphylactic shock and death, particularly in patients:
- With labile or steroid-dependent asthma (5.1)
- With extreme sensitivity to allergen(s) (5.1)
- Who are currently using beta blockers (5.2)
- Who are on an accelerated immunotherapy build-up schedule (5.1)
- Who are being changed from one allergenic extract to another (5.1)
- Who are receiving high doses of allergen extracts (5.1)

----------ADVERSE REACTIONS----------
- Systemic reactions may be fatal or near fatal (6)
- Systemic reactions (e.g., generalized skin erythema, urticaria, pruritus, angioedema, rhinitis, wheezing, laryngeal edema, and hypotension) occur in 4-7% of patients
- The most common reactions are local reactions at the injection site (e.g., erythema, itching, swelling, tenderness, pain), occurring in 26% to 82% of patients (6)

To report SUSPECTED ADVERSE REACTIONS, contact Greer Laboratories, Inc., at 1-800-438-0088 or the FDA at 1-800-fda-1088 or www.fda.gov/medwatch

----------DRUG INTERACTIONS----------
- Patients who are receiving beta agonists may be unresponsive to the usual doses of epinephrine used to treat serious systemic reactions, including anaphylaxis (7.1)
- Patients should discontinue medications known to suppress the histamine response prior to skin testing including: antihistamine (7.2), tricyclics (7.4), and topical corticosteroids and topical anesthetics (7.3)

----------USE IN SPECIFIC POPULATIONS----------
- Pregnancy: No human or animal data. Use only if clearly needed (8.1)
- Autoimmune Disease: immunotherapy may exacerbate the autoimmune disease. Use only if clearly needed (5.3)

See 17 for PATIENT COUNSELING INFORMATION

Revised 11/2009

FULL PRESCRIBING INFORMATION : CONTENTS*

*Sections or subsections omitted from the Full Prescribing Information are not listed.

FULL PRESCRIBING INFORMATION

WARNING: ANAPHYLAXIS
- Do not inject intravenously. (2.2)
- Allergenic extracts may potentially elicit a severe life-threatening systemic reaction, rarely resulting in death. (5.1)
- This allergenic product is intended for use only by physicians who are experienced in the administration of allergenic extracts and the emergency care of anaphylaxis, or for use under the guidance of an allergy specialist. (5.1)
- The initial dose must be based on skin test. (2.1)
- Observe patients in the office for at least 30 minutes following treatment. Emergency measures and personnel trained in their use must be available immediately in the event of life threatening reaction. (5.1)
- Immunotherapy may not be suitable for patients with medical conditions that reduce their ability to survive a systemic reaction, including significant cardiovascular and/or pulmonary diseases. Patients who are receiving beta blockers may be unresponsive to the usual doses of epinephrine used to treat systemic reactions, including anaphylaxis. (5.2)

1 INDICATIONS AND USAGE

Greer Standardized Mite (*Dermatophagoides farinae* and/or *Dermatophagoides pteronyssinus*) Extracts are allergenic extracts indicated for
- skin test diagnosis of mite allergy
- treatment of patients with mite-induced allergic asthma, rhinitis and conjunctivitis.

For Immunotherapy, patients must show hypersensitivity to *Dermatophagoides farinae (D. farinae)* or *Dermatophagoides pteronyssinus (D. pteronyssinus)* based on their clinical history, allergen exposure history, and skin test reactivity.

2 DOSAGE AND ADMINISTRATION

Do not inject intravenously.

Greer Standardized Mite extracts are diluted with sterile diluent for allergenic extracts when used for intradermal testing or subcutaneous immunotherapy. Dosages vary by mode of administration, and by individual response and tolerance. Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration, whenever solution and container permit. Greer Standardized Mite Extracts should be a light brown solution that is free of particulate matter. If particulate matter is observed then the solution should be discarded.

2.1 DIAGNOSTIC TESTING

For diagnosis of a patient with a suspected allergy to either species of dust mite (*D. farinae or D. pteronyssinus*), diagnostic skin testing should include the standardized mite mixture or the single-species mite extracts.
- If a skin test with the standardized mite mixture elicits a positive

reaction, then the single-species mite extracts can be used to determine the degree of sensitivity to each, and to guide in the selection of extracts and their concentration for immunotherapy, if indicated.
- A positive skin test reaction to any allergen must be interpreted in light of the patient's history of symptoms, the time of year, and known exposure to environmental allergens.

2.1.1 Percutaneous Skin Testing

For percutaneous (scratch, prick, or puncture) testing, use 10,000 Allergy Units/mL Greer Standardized Mite Extract stock concentrate in dropper vials. **If patient is suspected of having exquisite sensitivity, such as anaphylaxis, to certain foods and drugs, initiate percutaneous testing with several serial 10-fold dilutions of the usual test concentration.**
- For scratch tests, scarify the skin, and then apply one drop of the extract to the scratch.
- For prick tests, place one drop of extract on the skin and pierce through the drop into the skin with a slight lifting motion.
- For puncture tests, place one drop of extract on the skin and pierce through the drop perpendicular to the skin.

When using percutaneous test devices, follow the directions provided with the test devices.

Include a positive control to detect false negative responses to skin testing, which may occur if serum levels of antihistamines remain from prior medication administration [see *Drug Interactions (7.2)*]. A glycerinated histamine phosphate diluted to 10mg/mL (6mg/mL histamine base) may be used as the positive control.

Include a negative control to detect false positive responses, which can occur when the patient has a non-specific reaction to the diluent. A 50% gylcerosaline solution may be used as the negative control.

Read skin tests 15-20 minutes after exposure. Record the induration (wheal) and erythema (flare) response by noting the longest diameter of each, or by the sum of the longest erythema diameter and the mid-point orthogonal diameters of erythema (ΣE).

Percutaneous testing devices often have their own grading systems, as these devices may cause different degrees of trauma to the skin and deliver different volumes of allergenic extract. Follow grading instructions for the device used.

2.1.2 Intradermal Skin Testing

Intradermal tests are commonly used when the reaction to percutaneous testing is negative or equivocal but the patient has a strong clinical history of symptoms triggered by exposure to a specific allergen. Because immediate systemic reactions are more common with intradermal testing, prescreening with percutaneous testing is a practical safety measure.[1]

Dilute the stock concentrate with sterile diluent. Use saline with human serum albumin (HSA), buffered saline, or saline. **If prescreening is not done, or if patients are expected to be high risk, precautions should be observed since some patients have experienced anaphylaxis and death.**
- Patients who do not react to percutaneous skin testing should be tested intradermally at a starting dose of 0.02 to 0.05 mL of a

50 Allergy Units/mL extract dilution.
- Patients suspected of being highly allergic should first receive a test dose of 0.02 to 0.05 mL of a 0.05 Allergy Units/mL extract dilution.
- If the intial dose test is negative, subsequent intradermal tests using increasingly stronger doses may be performed up to the maximum recommended strength of 200 Allergy Units / mL.
- If percutaneous skin testing was not performed, include a positive control to detect false negative responses to skin testing, which may occur if serum levels of antihistamines remain from prior medication administration [see *Drug Interactions (7.2)*]. A glycerinated histamine phosphate diluted to 0.5 mg/mL (0.18 mg/mL histamine base) or aqueous histamine phosphate 0.275 mg/mL (0.1 mg/mL histamine base) may be used as the positive control.
- If percutaneous skin testing was not performed, include a negative control to detect false positive responses, which can occur when the patient has a non-specific reaction to the diluent. A 1% glycerin in 0.9% saline solution may be used as the negative control.
- Measure the wheal-and-flare response after 15-20 minutes, which may be graded using various methods as described in the instructions for the device used.

The mean dose of Greer dust mite allergen required to elicit a positive intradermal test result (ΣE 50 mm) in a total of 83 mite puncture test positive (ΣE 20 mm) persons is shown in Table1.

Table 1. Intradermal Reactivity to Mite Allergens

Allergen	Number of Persons	Dose to Elicit 50 mm Sum of Diameter Erythema Reaction	
		Mean (AU*/mL)	Range (AU/mL)
D. farinae	46	0.00856	0.00004 - 1.75935
D. pteronyssinus	37	0.00570	0.00002 - 1.36341**

* Allergy Units
** Data is available on file with Greer

2.2 IMMUNOTHERAPY

Subcutaneous injection only.

Subcutaneous injections for immunotherapy should be prepared by dilution of stock concentrate based on patient's reactivity. Stock concentrations of Greer Standardized Mite Extract are available in 5,000 Allergy Units/mL, 10,000 Allergy Units/mL, 30,000 Allergy Units/mL for immunotherapy. See Table 2 for dilution preparation. Also see Dosage Modification Guidelines. (2.2.1)
- The initial dose of the extract should be based on the percutaneous test reactivity. In patients who appear to be exquisitely sensitive by history and skin test, the initial dose of the extract should be 0.1 mL of a 0.005 to 0.05

Allergy Units/mL dilution. Patients with lesser sensitivity may be started at a 0.5 to 5 Allergy Units/mL dilution.
- The dose of allergenic extract is increased at each injection by no more than 50% of the previous dose, and the next increment is governed by the response to the last injection.
- Large local reactions which persist for longer than 24 hours are generally considered an indication for repeating the previous dose or reducing the dose at the next administration.
- **Any evidence of a systemic reaction is an indication for a significant reduction (at least 75%) in the subsequent dose. Repeated systemic reactions, even of a mild nature, are sufficient reason for the cessation of further attempts to increase the reaction-causing dose.**
- **Severe reactions require a decrease in the next dose by at least 50%. Proceed cautiously in subsequent dosing.**
- A maximum tolerated maintenance dose should be selected based on the patient's clinical response and tolerance. Doses larger than 0.2 mL of the concentrate are rarely administered because an extract in 50% glycerin may cause discomfort upon injection.
- Since the two mite species tend to cross-react, consider the total Allergy Units content in determining the maximum maintenance dose of the mixture.

2.2.1 Dosage Modifications Guidelines for Immunotherapy

The following conditions may indicate a need to withhold or reduce the dosage of immunotherapy. In situations prompting dose reduction, once the reduced dose is tolerated, a cautious increase in dosage can be attempted.
Immunotherapy should be withheld or reduced in dosage if the following concurrent conditions exist:
- Severe symptoms of rhinitis and/or asthma;
- Infection accompanied by fever; or
- Exposure to excessive amounts of clinically relevant allergen prior to a scheduled injection.

Changing to a different lot of extract: All extracts lose potency over time. A fresh extract may have an effective potency that is substantially greater than that of older extracts. Therefore, the first dose from the fresh vial should not exceed a 25% increase of the previous dose or a 75% reduction of the previous dose, assuming both extracts contain comparable amounts of allergen, defined by Allergy Units.

Unscheduled Gaps between Treatments: Patients may lose tolerance for allergen injections during prolonged periods between doses, thus increasing their risk for an adverse reaction. The duration of tolerance between injections varies from patient to patient.
- During the build-up phase, when patients receive injections 1 to 2 times per week, it is customary to repeat or even reduce the extract dosage if there has been a substantial time interval between injections. This depends on 1) the concentration of allergen immunotherapy extract that is to be administered, 2) a

previous history of systemic reactions, and 3) the degree of variation from the prescribed interval of time, with longer intervals since the last injection leading to greater reductions in the dose to be administered. This suggested approach to dose modification due to unscheduled gaps between treatments during the build-up phase is not based on published evidence. The individual physician should use this or a similar protocol as a standard operating procedure for the specific clinical setting.
- Similarly, if large unscheduled gaps occur during maintenance therapy, it may be necessary to reduce the dosage. The individual physician should devise a protocol as a standard operating procedure for his or her specific clinical setting in determining how to modify doses of allergen immunotherapy due to unscheduled gaps in treatment.

The extract previously used is from another manufacturer: Since manufacturing processes and sources of raw materials differ among manufacturers, the interchangeability of extracts from different manufacturers cannot be assured. The starting dose of the extract from a different manufacturer should be greatly decreased even though the extract is the same formula and dilution. In general, a dose reduction of 50-75% of the previous dose should be adequate, but each situation must be evaluated separately considering the patient's history of sensitivity, tolerance of previous injections, and other factors. Dose intervals should not exceed one week when rebuilding dose.

The previous extract has expired or is near expiry: The dating period for allergenic extracts indicates the time that they can be expected to remain potent under ideal storage conditions (2° - 8°C) [see *How Supplied/Storage and Handling (16)*]. Some loss of potency occurs even when stored under ideal conditions, therefore extracts should not be stored beyond the expiration date. Instead, a new lot should be used (see *"Changing to a different lot of extract"*, above)

Changing from non-stabilized to human serum albumin (HSA) stabilized diluents: Allergenic extracts diluted with HSA and 0.4% phenol are more potent than extracts diluted with diluents that do not contain stabilizers. When switching from a non-stabilized to an HSA stabilized diluent, consider lowering the dose for immunotherapy.

2.2.2. Administration of Immunotherapy

Administer immunotherapy by subcutaneous injection in the lateral aspect of the arm or thigh. Avoid injection directly into any blood vessel.
- The optimal interval between doses of allergenic extract varies among individuals. Injections are usually given 1 or 2 times per week until the maintenance dose is reached, at which time the injection interval is increased to 2,3, and finally 4 weeks.
- Because most adverse reactions occur within 30 minutes after injection, patients should be kept under observation for at least 30 minutes.[2] For high risk patients 30 minutes of observation may not be sufficient.

2.3 DILUTION PREPARATION

To prepare dilutions for intradermal testing and immunotherapy, start with a 5,000, 10,000, or 30,000 Allergy Units/mL stock concentrate, and prepare

a 1:10 dilution by adding 0.5 mL of concentrate to 4.5 mL of sterile aqueous diluent. Subsequent dilutions are made in a similar manner (see Table 2).

Table 2. Ten-fold Dilution Series for intradermal testing and immunotherapy

Dilution	Extract	Diluent	AU*/mL	AU/mL	AU/mL
0	Concentrate		5,000	10,000	30,000
1	0.5 mL Concentrate	4.5 mL	500	1,000	3,000
2	0.5 mL Dilution 1	4.5 mL	50	100	300
3	0.5 mL Dilution 2	4.5 mL	5	10	30
4	0.5 mL Dilution 3	4.5 mL	0.5	1	3
5	0.5 mL Dilution 4	4.5 mL	0.05	0.1	0.3
6	0.5 mL Dilution 5	4.5 mL	0.005	0.01	0.03

*Allergy Units

3 DOSAGE FORMS AND STRENGTHS

For immunotherapy, concentrated extracts are diluted in normal saline, buffered saline, albumin saline or 10% glycerosaline. For intradermal testing extracts may be diluted in normal saline, buffered saline, or albumin saline.

Greer Standardized Mite Extract *D. farinae* and Greer Standardized Mite Extract *D. pteronyssinus* are supplied as stock concentrates containing 10,000 Allergy Unit/mL and Greer Standardized Mite Extract mixture (*D. farinae* and *D. pteronyssinus*) is supplied as a stock mixture concentrate containing 5,000 Allergy Units/mL of each species for use in percutaneous skin testing.

Greer Standardized Mite Extract *D. farinae* and Greer Standardized Mite Extract *D. pteronyssinus* are supplied as stock concentrates containing 5,000, 10,000, or 30,000 Allergy Unit/mL. Greer Standardized Mite Extract mixture (*D. farinae* and *D. pteronyssinus*) is supplied as a stock mixture concentrate containing 5,000 and 15,000 Allergy Units/mL of each species for use in intradermal testing and immunotherapy.

4 CONTRAINDICATIONS

None

5 WARNINGS AND PRECAUTIONS

5.1 Serious Systemic Reactions

All concentrates of Greer Standardized Mite Extracts have the ability during skin testing and immunotherapy to elicit serious systemic reactions including anaphylactic shock and death [see *Adverse Reactions (6)*].

A review of the literature indicates that the incidence of near-fatal reactions to immunotherapy, defined as severe respiratory compromise, hypotension, or both, and requiring emergency treatment with epinephrine, has been estimated at 5.4 events per million injections in a 10-year retrospective survey of allergists.[3] Fatalities from immunotherapy injections have been estimated to occur at a rate of approximately one death per 2.0 to 2.8 million injections in 4-, 10- and 12-year retrospective surveys of allergists.[4-6]

Because of the danger of serious reactions, caution is required in testing and treating high risk patients and those with medical conditions that reduce their ability to survive a serious systemic adverse event.
High-risk patients are defined as those patients:

- with labile or steroid-dependent asthma, particularly in those suffering an exacerbation of their symptoms at the time of extract administration;
- with extreme sensitivity to a particular allergen(s);
- who are currently using beta blockers;
- who are receiving an accelerated immunotherapy build-up schedule (e.g., rush immunotherapy);
- who are being changed from one allergenic extract to another;
- who are receiving high doses of allergenic extracts.

High risk patients have had fatal reactions. In addition, patients not high-risk but on beta blockers have had fatal reactions because beta blockers interfere with beta adrenergics such as epinephrine used in treatment of anaphylaxis.

Patients should be kept under observation for a minimum of 30 minutes after receiving allergenic extracts so that any adverse reaction can be observed and properly handled.[2]

Medications to treat systemic reactions, as well as emergency equipment should be available for immediate use. Extracts must only be administered by persons who are aware of the risk of systemic reactions, including anaphylaxis; are capable of handling such reactions; and have the necessary drugs and equipment on hand to do so.

5.2 Patients on Beta Blockers

Patients receiving beta blockers may be unresponsive to the usual doses of epinephrine used to treat serious systemic reactions, including anaphylaxis. Inhalant allergy immunotherapy should be approached with caution in patients taking beta blockers. The risks of anaphylaxis in these patients should be carefully weighed against the benefits of immunotherapy [see *Drug Interactions (7.1)*].

5.3 Autoimmune Disease

Immunotherapy should be given cautiously to patients with other immunologic diseases and only if the risk from exposure to the allergen is greater than the risk of exacerbating the underlying disorder[2].

6 ADVERSE REACTIONS

Systemic reactions consist primarily of allergic symptoms, such as generalized skin erythema, urticaria, pruritus, angioedema, rhinitis, wheezing, laryngeal edema, and hypotension. Additional symptoms that are not usually associated with allergy also may occur, such as nausea, emesis, abdominal cramps, and diarrhea. Serious reactions may cause shock, loss of consciousness, and even death. Based on published studies,[7,8] systemic reactions occur in less than 1% of patients receiving conventional immunotherapy to greater than 36% in some studies of patients receiving rush immunotherapy.

Local reactions at the injection site are the most commonly occurring reactions (e.g., erythema, itching, swelling, tenderness, pain). Although most adverse systemic reactions occur within 30 minutes of injection (some within minutes of extract exposure), such reactions also can occur up to six hours after skin tests of immunotherapy [see *Dosage and Administration (2.2)*][9].

7 DRUG INTERACTIONS

7.1 Beta Adrenergic Drugs

Patients receiving beta blocker drugs may not be responsive to beta adrenergic drugs used to treat anaphylaxis[10], and may wish to temporarily postpone treatment day of skin testing. All such decisions should be made in consultation with the physician. [see *Warnings* and *Precautions (5.2)*].

7.2 Antihistamines[1]

Skin testing with allergenic extracts should not be performed within 2-3 days of first-generation H1-histamine receptor blockers (e.g., clemastine, diphenhydramine) and within 3 to 10 days of second-generation antihistamines (e.g., loratadine, terfenadine), except for astemizole, which requires an interval of 30-60 days between allergenic extract exposure and use. These products suppress histamine skin test reactions and could mask a positive response.

7.3 Topical Corticosteroids and Topical Anesthetics[1]

Topical corticosteroids may suppress skin reactivity and should be discontinued at the skin test site for at least 2-3 weeks before skin testing. Topical local anesthetics may suppress flare responses and should be avoided at skin test sites.

7.4 Tricyclic Antidepressants[1]

Tricyclic antidepressants can have potent antihistamine effects and will affect skin testing. Since use of tricyclics may alter skin test results, dosing for both skin testing and immunotherapy should be done with caution. If tricyclic medication has been recently discontinued, allow 7-14 days prior to skin testing to obviate the antihistamine effect. The risk of anaphylaxis in these patients should be carefully weighed against the risks and benefits of stopping tricyclics.

7.5 Other drugs

The suppressive action of other drugs should be considered and emphasizes the need for a histamine positive-control test.

8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy

Pregnancy Category C: Animal reproduction studies have not been conducted with Greer Standardized Mite Extracts. It is also not known whether Greer Standardized Mite Extracts can cause fetal harm when administered to a pregnant woman or whether they can affect reproduction capacity. Standardized Mite Extracts should be given to a pregnant woman only if clearly needed.

Studies have not been performed in animals to determine whether extracts affect fertility in males or females, have teratogenic potential, or have other adverse affects on the fetus. Exercise caution in testing or treating pregnant females because a systemic reaction may cause maternal cardiovascular compromise leading to fetal distress with sequelae.

8.3 Nursing Mothers

It is not known whether allergenic extracts or their antigens are excreted in human milk. Because many drugs are excreted in human milk, exercise caution when extracts are administered to a nursing woman.

8.4 Pediatric Use

No studies have systematically examined differences in response to immunotherapy among child and adult patients. Children appear to tolerate injections of allergenic extracts very well.[2] Very young children

(under age 5) can have difficulty cooperating with an immunotherapy program and for this reason, the physician should consider the benefits and risks of immunotherapy and individualize treatment in patients under the age of 5 years. [See *Warnings and Precautions (5)*].

8.5 Geriatric Use

Clinical studies of Greer Standardized Mite Extract did not include sufficient numbers of subjects aged 65 and older to determine whether they respond differently from younger subjects. Other reported clinical experiences has not identified differences in responses between the elderly and younger patients. In general, dose selections for an elderly patient should be cautious, usually starting at the low end of the dosing range. reflecting the greater frequency of concomitant disease or other drug therapy including beta blockers.[2]

10 OVERDOSAGE

For all allergenic extracts the therapeutic dose varies per individual. If a dose exceeds the window for a particular patient this may be considered an overdose and the patient may experience anaphylaxis. Systemic reactions are uncommon after injection, but if the patient receives more extract than can be tolerated at that particular time, and begins to experience immediate hypersensitivity anaphylaxis, institute emergency treatment by trained personnel.

Overdosage may occur because of an error in the volume of extract or incorrect diluents injected. An overdose may also occur when, in addition to immunotherapy, the patient is exposed concomitantly to similar environmental allergens. In the event of a systemic reaction, the preparation of allergen and dosage schedule should be carefully reviewed.

11 DESCRIPTION

Greer Standardized Mite (*Dermatophagoides farinae and/or Dermatophagoides pteronyssinus*) extracts are sterile solutions used for intradermal testing or subcutaneous immunotherapy. Each vial contains 5,000, 10,000, or 30,000 Allergy units/mL of sterile mite extract (*D. farinae* and/or *D. pteronyssinus*), 50% glycerin v/v, and 0.4% phenol (preservative). Inert ingredients include 0.50% sodium chloride for isotonicity and 0.25% sodium bicarbonate as a buffer.

For immunotherapy, concentrated extracts are diluted in normal saline, buffered saline, albumin saline or 10% glycerosaline based on patient's reactivity. For intradermal testing, extracts may be diluted in normal saline, buffered saline, or albumin saline.

Source materials for the extract are whole mite bodies. The mites are cultured, handled, and cleaned to remove at least 99% of the food medium. The medium contains no material of human origin.

The mite extract is standardized by comparison to a reference preparation supplied by the Center for Biologics Evaluation and Research of the FDA, labeled 10,000 Allergy Unit/mL. The relative potency of the extract is determined by ELISA inhibition compared to the FDA mite reference, and is labeled in Allergy Unit/mL.

12 CLINICAL PHARMACOLOGY

Dust mites belonging to the genus *Dermatophagoides* are indoor allergens found in humid geographic locations worldwide. *D. farinae* and *D. pteronyssinus* occur widely with most homes in the United States coinhabited by both species.[11]

12.1 Mechanism of Action

The complete mechanisms of allergen immunotherapy are not clear and remain the subject of investigation. The allergic reaction is dependent on the presence of allergen-specific immunoglobulin E (IgE) antibodies that are bound to specific receptors on mast cells and basophils. The presence of IgE antibodies sensitizes these cells, and upon interaction with the appropriate allergens, histamine and other mediators are released which produce local or systemic responses in sensitive individuals, and characteristic symptoms of atopic diseases, such as allergic rhinitis and allergic asthma. Changes in serum antibody and T-lymphocyte responses resulting from immunotherapy have been demonstrated, and these changes often correlate closely with clinical (symptom) improvements. Specific mechanisms may vary depending on the nature of the allergic disease, the allergenic specificities of patients and populations, extract formulations, route of administration, dose and duration of treatment.[2]

Subcutaneous administration of allergenic extracts is known to elicit numerous immunological changes that are both time and dose-dependent. Many of these changes appear to be related to (or a precursor to) improvements in symptoms and other clinical parameters, as noted above. Specific changes found after immunotherapy with dust mite extracts include significant increases in mite-specific IgG4 antibodies[12], interleukin-10-positive T cells, and several T-cell receptors, and significant decreases in serum nitric oxide, eosinophil cationic protein, interleukin-4-positive T cells and IgE-mediated basophil histamine release.[13]

13 NONCLINICAL TOXICOLOGY

13.1 Carcinogenicity, Mutagenesis or Impairment of Fertility

No studies in animals have been performed to evaluate carcinogenicity, mutagenicity or impairment of fertility.

14 CLINICAL STUDIES

The dust mites *D. farinae* and *D. pteronyssinus* are the major source of allergens in house dust[14]. The efficacy of immunotherapy for Type I hypersensitivity (i.e., allergy) to airborne allergens[2,15,16] including dust mite has been well established. Specifically, immunotherapy for allergic hypersensitivity to house dust mite allergens has been addressed in a 1995 Cochrane meta-alalysis of 20 randomized, controlled trials of immunotherapy[17], and two subsequent updated Cochrane meta-analysis published in 1999 [18] and 2003 [19]. In addition, efficacy for immunotherapy in rush or cluster protocols, in which the dose escalation is compressed over days or weeks, has also been demonstrated[20, 21].

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16 HOW SUPPLIED/STORAGE AND HANDLING

16.1 Storage and Handling

Store dust mite extract at 2°-8°C (36° to 46°F).

Keep dust mite extract at 2°- 8°C (36° to 46°F) during office use.

Dilutions of concentrated extract result in a glycerin content of less than 50% which results in reduced stability of the extracts. 1:100 dilutions should be kept no longer than a month, and more dilute solutions no more than a week. The potency of a dilution can be checked by skin test comparison to a fresh dilution of the extract on a known mite allergic individual.

16.2 How Supplied

Mite extracts in 50% Glycero-Coca solution are supplied as follows:

D. farinae: NDC 22840-0033	5,000 Allergy Unit/mL, 10, 30, and 50 mL vials
D. farinae: NDC 22840-0034	10,000 Allergy Unit/mL, 10, 30, and 50 mL vials
D. farinae: NDC 22840-0038	30,000 Allergy Unit/mL, 10, 30, and 50 mL vials
D. pteronyssinus NDC 22840-0035	5,000 Allergy Unit/mL, 10, 30, and 50 mL vials
D. pteronyssinus: NDC 22840-0036	10,000 Allergy Unit/mL, 10, 30, and 50 mL vials
D. pteronyssinus: NDC 22840-0039	30,000 Allergy Unit/mL, 10, 30, and 50 mL vials
D. farinae/D. pteronyssinus mixture: NDC 22840-0037	5,000 Allergy Unit/mL each species, 10, 30, and 50 mL vials
D. farinae/D. pteronyssinus mixture: NDC 22840-0040	15,000 Allergy Unit/mL each species, 10, 30, and 50 mL vials
D. farinae: NDC 22840-0034	10,000 Allergy Unit/mL, 5 mL percutaneous test vial
D. pteronyssinus: NDC 22840-0036	10,000 Allergy Unit/mL, 5 mL percutaneous test vial
D. farinae/D. pteronyssinus mixture: NDC 22840-0037	5,000 Allergy Unit/mL each species, 5 mL percutaneous test vial

17 PATIENT COUNSELING INFORMATION

Instruct the patient to remain in the office for observation for a minimum of 30 minutes after an injection; longer, if deemed necessary for the individual.

Caution patients that reactions may occur more than 30 minutes after skin testing or an injection.

Instruct patient to recognize the following symptoms as adverse reactions and to immediately return to the office or immediately seek other medical attention if any of these symptoms occur following an injection.

- Unusual swelling and/or tenderness at the injection site
- Swelling of face and/or mouth
- Sneezing, coughing or wheezing
- Shortness of breath
- Nausea
- Dizziness or faintness

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allergy immunotherapy
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Lenoir, NC 28645
USA

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ALLERGENIC EXTRACT STANDARDIZED MITE *Dermatophagoides farinae and/or Dermatophagoides pteronyssinus*

SUGGESTED DOSAGE SCHEDULE AND INSTRUCTIONS

P.O. Box 800
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ALLERGENIC EXTRACTS

Short Ragweed
and
G.S. Ragweed Mix

Suggested Dosage Schedule
and Instructions

WARNING

Allergenic extracts can elicit severe adverse reactions when improperly administered (see below under Warnings). Any person administering allergenic extracts should be experienced in their use, aware of the risk of adverse reactions, and capable of properly handling such reactions.

DESCRIPTION

Each vial contains an extract of Short Ragweed (**Ambrosia elatior**) pollen or of equal parts Short and Giant Ragweed (**A. trifida**) pollen extracts. Extracts are supplied in a buffered saline solution with or without glycerin (50%) added as a stabilizer. Extracts are supplied as a sterile solution intended for subcutaneous or intracutaneous administration.

Each lot of Short Ragweed extract or Mixed Ragweed extract is assayed for Antigen E content using a radial immunodiffusion test[1] employing known Antigen E standards and anti-Antigen E antisera. Extracts containing Short Ragweed at a concentration of 1:20 or stronger are assayed for Antigen E. Extracts more dilute than this are not assayed but the Antigen E content is obtained by calculation based on the Antigen E content of the concentrate.

Antigen E, a protein with a molecular weight of approximately 38,000, has been found to be a major antigenic component of Short Ragweed pollen.[2,3] Antigen E content has been shown to correlate well with skin test reactivity of ragweed extracts.[4] For this reason, Antigen E content is being used to standardize Short Ragweed extracts in addition to the protein nitrogen content or weight to volume ratios as have been used.

When transferring patients from non-standardized extracts to a standardized extract, it is advisable to compare the potency of the different lots by comparative skin testing using the same concentrations of each extract. Marked differences in skin reactivity will indicate differences in potency and the need to adjust dosages so as to avoid possible severe reaction.

CLINICAL PHARMACOLOGY

Controlled studies employing Ragweed extracts and Antigen E immunotherapy have demonstrated an increase in Ragweed antigen-specific blocking antibodies. These studies also demonstrated significant symptom amelioration in Ragweed allergic individuals.[5,6] The total mechanism of immunotherapy is not yet known and is still being investigated.

INDICATIONS

Hyposensitization is indicated when careful testing and patient history can pinpoint allergens responsible for allergic symptoms, and when it is not possible or practical to avoid these allergens. Allergenic extracts are administered to reduce symptoms of allergy of a seasonal or perennial nature.

CONTRAINDICATIONS

Immunotherapy with Ragweed antigens is contraindicated in those individuals who do not exhibit skin test or clinical sensitivity to Ragweed antigens. (See below under Warnings and Precautions)

WARNINGS

Allergenic extracts can elicit adverse local and systemic reactions if initial dosage or rate of dosage increase is too high. These factors must be carefully evaluated by the physician based on history, degree of sensitivity, and skin test results prior to commencement or continuation of therapy. Any person administering a biological product should be aware of the risk of local or systemic reactions if improperly used and be capable of handling such reactions. (See below under Adverse Reactions.) Patients receiving allergenic extracts should be kept under observation a minimum of thirty (30) minutes so that any adverse reaction can be observed and properly handled. See information above in Description category for information on transferring patients from non-standardized to standardized extracts.

PRECAUTIONS

Check lot number and dosage schedule of patient to verify correctness of prescription number or vial number. Only after this verification has been made should an appropriate injection be given. A separate sterile needle and syringe should be used for each patient to prevent transmission of homologous serum hepatitis and other infectious agents.

Pregnancy Category C. Animal reproduction studies have not been conducted with allergenic extracts. It is also not known whether allergenic extracts can cause fetal harm when administered to a pregnant woman or whether it can affect reproduction capacity.

ADVERSE REACTIONS:

Allergic reactions following injections of allergens include generalized erythema, pruritis, rhinitis, asthma, and laryngeal edema. Syncope, shock, and hypotension have also been reported. Adverse reactions should be treated as follows:

A. A tourniquet should be immediately applied to the extremity above the site of injection. Release tourniquet every few minutes for a few seconds.

B. Epinephrine 1:1000 should be injected immediately in the opposite arm in amounts of 0.3 to 0.5 mL and 0.2 mL epinephrine should be administered at the site of injection. For children below the age of 6 years, adjust dosage of epinephrine to 0.005 mL per pound of body weight per dose. Repeat epinephrine dosage in 15 minutes if necessary and if symptoms persist.

C. Adverse reactions not responding to epinephrine therapy may require the use of parenteral bronchodilators, vasopressors, oxygen, or volume replacement therapy.

DOSAGE AND ADMINISTRATION

A. Testing:

1. Scratch and Prick testing normally employ 1:20 glycerinated extracts, which contain 125-250 units Antigen E per mL (Short Ragweed) or 75-150 units Antigen E per mL (Ragweed Mix).

2. Intradermal testing with Short Ragweed and G.S. Ragweed Mix is routinely performed using 1:1000 w/v and 1,000 PNU/mL or more dilute material. It has been reported that as little as 10^{-6} unit (0.000001 μg) is sufficient to cause a positive skin test. In another study of 25 Antigen E sensitive individuals, the dose required for a 2+ reaction (8-10 mm wheal) ranged from 10^{-6} to 10^{-1} μg Antigen per mL using a 0.5 mL dose. [3]

   Individual sensitivity to Ragweed extracts will vary greatly and it is recommended that intradermal testing be started at low concentrations (i.e. 0.05 mL at 0.1 μg/mL- dose equals 0.005 μg Antigen E). If no reaction occurs, testing may be repeated with a stonger dilution.

B. Treatment:

Initial and subsequent treatment dosage must be based on careful testing procedures and evaluation of patient history. Studies have shown a definite correlation between symptom amelioration and maximum or cumulative dosage achieved. One study[5] has shown significant clinical improvement with an average cumulative preseasonal dosage equivalent to 252 μg of Antigen E, but no significant improvement with an average cumulative dosage of 32 μg Antigen E. In another study[8] a mean cumulative dosage of 84.9 μg Antigen E (as whole ragweed extract) was significantly effective in reducing allergenic symptoms compared to placebo.

The dosage schedule shown below, based on Antigen E content, will deliver approximately 85 μg Antigen E in 18 injections. Initial and subsequent treatment dosage must be based on careful testing procedures and patient history. Highly sensitive individuals will require lower initial dosage, more moderate dosage increase, and may not tolerate as high a maintenance dosage as the moderately sensitive individual. The suggested schedule shown below is for a moderately sensitive individual and must be modified by the physician to suit each patient if necessary.

SUGGESTED DOSAGE SCHEDULE
OF SHORT RAGWEED AND G.S. RAGWEED MIX
ANTIGEN E STANDARD

Injection Number	Vial Number	Antigen E per mL	Volume (mL)	Dose AgE
1	1	0.3	0.05	0.015
2	1	0.3	0.10	0.03
3	1	0.3	0.20	0.06
4	1	0.3	0.40	0.12
5	1	0.3	0.70	0.21
6	2	3.0	0.10	0.30
7	2	3.0	0.20	0.60
8	2	3.0	0.30	0.90
9	2	3.0	0.50	1.50
10	2	3.0	0.70	2.10
11	3	30.0	0.10	3.00
12	3	30.0	0.15	4.50
13	3	30.0	0.20	6.00
14	3	30.0	0.30	9.00
15	3	30.0	0.40	12.00
16	3	30.0	0.50	15.00*
17	3	30.0	0.50	15.00*
18	3	30.0	0.50	15.00*

*Maintenance dosage

It is recommended that patients receive injections at five to seven day intervals until maintenance dosage is achieved. Maintenance dosage can be given at 2 to 4 week intervals. All doses of allergenic extract are administered subcutaneously in the lateral aspect of the upper arm or thigh. Avoid injecting directly into any blood vessel and use a 26 or 27 gauge needle $^{3}/_{8}$" in length.

OVERDOSAGE

Systemic reactions are uncommon after injection, but if the patient receives more extract than can be tolerated at that particular time, the procedures listed under Adverse Reactions should be instituted.

Overdosage may occur because of an error in the volume of extract injected, an incorrect dilution injected, or because the patient may be exposed to airborne antigens simultaneously with injection of the same antigens. In the event of a systemic reaction occurring, the dosage schedule should be carefully reviewed and if necessary adjusted as outlined above.

STORAGE

Short Ragweed containing extracts should be stored at 2°-8°C at all times, even during use, to prolong the potency of the extracts. Our studies indicate that Antigen E in aqueous extracts decays approximately ten times more rapidly at room temperature (20°-25°C) than at refrigerator temperature (2°-8°C).

HOW SUPPLIED

Short Ragweed and G.S. Ragweed Mix extracts are supplied as sterile solutions 5, 10, 30 and 50 mL multiple dose vials and in 5 mL dropper vials for scratch testing. Various concentrations are available to suit the varying needs of the physician.

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OVERDOSAGE

Systemic reactions are uncommon after injection, but if the patient receives more extract than can be tolerated at that particular time and begins to experience immediate hypersensitivity anaphylaxis, the procedures listed under ADVERSE REACTIONS should be instituted.

Overdosage may occur because of an error in the volume of extract injected, or an incorrect dilution injected, or because the patient may be exposed to airborne or environmental antigens simultaneously with injection of the same antigens. In the event of a systemic reaction occurring, the dosage schedule should be carefully adjusted as outlined above under WARNINGS.

DOSAGE AND ADMINISTATION

1. DIAGNOSTIC TESTING

For the patient with a suspected diagnosis of allergy to more than one antigen, initial skin testing should include the individual extracts. If a screening skin test with a mixture is used, a positive response should be followed by testing with the individual extracts to determine the degree of sensitivity to each and to guide in the selection of extracts and their concentration for immunotherapy if indicated. However, because a negative skin test with a mixture may not be indicative of the absence of allergy to one or more of the components due to their dilution, testing with individual extracts is more precise. False negative responses may occur if serum levels of antihistamines remain from prior medication administration (see CONTRAINDICATIONS). The use of a positive control is especially recommended for patients on prior medications which may decrease the histamine skin test response.

Scratch or Prick-Puncture Skin Testing:

Allergenic Extract concentrates may be used for scratch or prick-puncture testing or scratch tests in 50% glycerin 1:20 W/V or strongest available strength in 5 mL vials may be used. Prick-puncture tests with concentrated extracts in patients highly sensitive to the specific antigen should yield distinctive wheals with diameters of greater than 5 mm and with much larger erythema reactions. Glycerinated histamine phosphate 5 mg/mL (1.8 mg/mL histamine base) or aqueous histamine phosphate 2.75 mg/mL (1mg/mL histamine base; 1:1000W/V) may be used as a positive control.

Intradermal Skin Testing:

Extract for intradermal testing must be prepared by diluting the stock concentrate injection vials with sterile diluent (use normal or buffered saline, or normal saline with human serum albumin) or the appropriate dilutions may be purchased.

a. Patients with a negative scratch or prick-puncture test:

Patients who do not react to a scratch or prick-puncture test should be tested intradermally, using a 26 or 27 gauge 1/4 inch needle, with 0.02 to 0.05 mL of an appropriage extract dilution from 1/100 to 1/1000 of the concentrate. A negative test should be followed by a repeat test using a

higher concentration until significant wheal and flare reaction sizes are attained or until the responses remain negative. As a negative control use the diluent or, in the case of extracts in 50% glycerin, use 0.5% to 1% glycerosaline solution. As a positive control use glycerinated histamine phosphate diluted to 0.5 mg/mL (0.18 mg/mL histamine base) or aqueous histamine phosphate 0.275 mg/mL (0.1 mg/mL histamine base).

b. Patients tested only by the intradermal method:

Since highly reactive individuals may react intracutaneously at 1:1 million or even 1:10 million dilutions, any intradermal injection should be preceded by a puncture test and the dose adjusted accordingly. Other patients suspected of being moderately allergic should be tested with 0.02 to 0.05 mL of an appropriate extract dilution on the order of 1/10,000 to 1/100,000 of the concentrate. A negative test should be followed by repeat tests using progressively stronger ten-fold concentrations until significant wheal and flare reaction sizes are attained, or until skin test responses with the higher concentrations remain negative. As a negative control, use the diluent or, in the case of extracts in 50% glycerin, use 0.5% to 1% glycerosaline solution. As a positive control, use glycerinated histamine phosphate diluted to 0.5 mg/mL (0.18 mg/mL histamine base) or aqueous histamine phosphate 0.275 mg/mL (0.1 mg/mL histamine base).

Skin tests are graded in terms of the wheal and erythema response noted at 15 to 20 minutes, and compared to the appropriate controls. Wheal and erythema sizes may be recorded by actual measurement.

2. IMMUNOTHERAPY

Immunotherapy is administered by subcutaneous injection. Dosage of Allergenic Extracts is individualized according to the patient's sensitivity, the clinical response, and tolerance to the extract administered during the phases of an injection regimen. The initial dose of the extract should be determined based on the puncture test reactivity. In patients who appear to be exquisitely sensitive by history and skin test, the initial dose of the extract should be 0.05 to 0.1 mL of a low concentration, such as dilution number 5 or 6 in TABLE 1 below. Patients with lesser sensitivity may be started with 0.05 to 0.1 mL of the next higher concentration. The amount of Allergenic Extract is increased at each injection by no more than 50% of the previous amount, and the next increment is governed by the response to the last injection. Large local reactions which persist for longer than 24 hours are generally considered an indication for repeating the previous dose or reducing the dose at the next administration. Any evidence of systemic reaction is an indication for a reduction of 75% in the subsequent dose. The upper limits of dosage have not been established; however, doses larger than 0.2 mL of an extract in 50% glycerin may cause discomfort upon injection. The dosage of Allergenic Extract does not vary significantly with the allergic disease under treatment.

To prepare dilutions starting from a concentrate such as 1:10 W/V, 1:20 W/V OR 20,000 PNU/mL, proceed as in TABLE 1 below. (Note: Add 0.5 mL of concentrate to 4.5 mL of sterile diluent and make additional dilutions in the same manner.

TABLE 1

Ten-Fold Dilution Series*

Dilution	Extract	Diluent	W/V	W/V	PNU/mL
0	Concentrate		1:10	1:20	20,000
1	0.5 mL concentrate	4.5 mL	1:100	1:200	2,000
2	0.5 mL dilution 1	4.5 mL	1:1,000	1:2,000	200
3	0.5 mL dilution 2	4.5 mL	1:10,000	1:20,000	20
4	0.5 mL dilution 3	4.5 mL	1:100,000	1:200,000	2
5	0.5 mL dilution 4	4.5 mL	1:1,000,000	1:2,000,000	0.2
6	0.5 mL dilution 5	4.5 mL	1:10,000,000	1:20,000,000	0.02

*There is no direct potency correlation across the table between PNUs and W/V.

The optimal interval between doses of Allergenic Extract has not been established. Injections usually are given 1 or 2 times per week until the maintenance dose is reached. The injection interval then is increased to 2 weeks, then to 3 weeks, and finally to 4 weeks. If the patient does not return for 6 to 8 weeks, the dose should be reduced to 25% of the last dose. If longer than 8 weeks, a dose reduction of one, two, or three dilutions may be made considering the components and the patient's sensitivity. The dosage and the interval between injections may need to be modified according to the clinical response of the patient. When switching patients to fresh extract, the initial dose should be reduced to 25% of the previous dose.

The usual duration of treatment has not been established. A period of two or three years of injection therapy constitutes an average minimum course of treatment.

HOW SUPPLIED

Stock concentrate extracts containing up to 40,000 PNU/mL, or 1:10 W/V or other dilutions as requested by the physician are supplied in 5, 10, 30, and 50 mL in aqueous or 50% glycerin buffered saline. House dust extract is supplied in a 1:1 W/V concentrate, or a maximum of 10,000 PNU/mL. Extracts are also supplied in dropper vials for scratch or prick testing.

STORAGE

Allergenic Extracts should be stored at 2-8° C and kept at this temperature range during office use. Refer to vial labels for expiration dates. Diluted extracts are inherently less stable than concentrates. Dilutions of glycerinated extracts which result in glycerin below 50% are also less stable. The more dilute extracts in aqueous diluents should be replenished daily. Potency of a particular dilution can be checked by skin test in comparison to a fresh dilution of the extract on an individual known to be allergic to the specific antigen.

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ALLERGENIC EXTRACTS

POLLENS, MOLDS, EPIDERMALS, INSECTS, DUSTS, FOODS, AND MISCELLANEOUS INHALANTS

Suggested Dosage Schedule and Instructions

WARNING

THIS ALLERGENIC PRODUCT IS INTENDED FOR USE BY PHYSICIANS WHO ARE EXPERIENCED IN THE ADMINISTRATION OF ALLERGENIC EXTRACTS AND THE EMERGENCY CARE OF ANAPHYLAXIS, OR FOR USE UNDER THE GUIDANCE OF AN ALLERGY SPECIALIST.

ALLERGENIC EXTRACTS MAY CAUSE SEVERE OR FATAL ANAPHYLAXIS IN EXTREMELY SENSITIVE PATIENTS. THE INITIAL DOSE MUST BE BASED ON SKIN TESTING AS DESCRIBED IN THE DOSAGE AND ADMINISTRATION SECTION OF THIS INSERT. PATIENTS SHOULD BE INSTRUCTED TO RECOGNIZE ADVERSE REACTION SYMPTOMS AND CAUTIONED TO CONTACT THE PHYSICIAN'S OFFICE IF REACTION SYMPTOMS OCCUR. IN CERTAIN INDIVIDUALS, THESE REACTIONS COULD BE FATAL. PATIENTS SHOULD BE OBSERVED FOR AT LEAST 20 MINUTES FOLLOWING TREATMENT.

EMERGENCY MEASURES, AS WELL AS PERSONNEL TRAINED IN THEIR USE, SHOULD BE IMMEDIATELY AVAILABLE IN THE EVENT OF A LIFE-THREATENING REACTION. PATIENTS BEING SWITCHED FROM ONE LOT OF EXTRACT TO ANOTHER FROM THE SAME MANUFACTURER SHOULD HAVE THEIR DOSE REDUCED BY 75%.

THIS PRODUCT SHOULD NOT BE INJECTED INTRAVENOUSLY.

REFER ALSO TO THE WARNINGS, PRECAUTIONS, ADVERSE REACTIONS AND OVERDOSAGE SECTIONS BELOW.

DESCRIPTION

Allergenic Extracts are supplied as a sterile solution for intracutaneous or subcutaneous administration. Concentrates contain the soluble extractants of the source material with 0.5% sodium chloride and 0.54% Sodium bicarbonate at a pH of 6.8 to 8.4 as aqueous extracts in water for injection or in 50% glycerin. Aqueous extracts contain 0.4% phenol as a preservative and 50% glycerinated extracts contain 0.2% phenol. Diluted aqueous extracts contain Buffered Saline with 0.5% sodium chloride, 0.04% potassium phosphate, 0.11% sodium phosphate heptahydrate, and 0.4% phenol in water for injection.

Source materials for these extracts are as follows: Pollens are collected from the respective grasses, weeds, trees, shrubs, cultured plants, and flowers. Mold extracts are produced from pure culture mycelial mats. Rusts and smuts are obtained from natural growths. Epidermal extracts are produced from the hide, hair, or feathers containing the natural dander, or from separated dander. Insects are the whole body insects. House dust is made from various dusts ordinarily found in the home with the extract dialyzed to remove low-molecular weight irritants and concentrated to an extraction ratio of 1:1. Food extracts are prepared from the edible portions of the respective foods, obtained fresh if possible. Certain diagnostic food extracts contain 0.1% sodium formaldehyde sulfoxylate as an antioxidant. Other miscellaneous inhalants involved in respiratory allergy are obtained in the naturally occurring form to which a patient may be exposed.

Extracts are labeled either by weight-to-volume (W/V) based on the weight of the source material to the volume of the extracting fluid, or in

protein nitrogen units (PNU) based on assay with one PNU representing 0.00001 mg of protein nitrogen.

CLINICAL PHARMACOLOGY

The allergic reaction is dependent upon the presence of antigen-specific immunoglobulin E (IgE) antibodies that are bound to specific receptors on mast cells and basophils. The presence of IgE antibodies on mast cells and basophils sensitizes these cells and, upon interaction with the appropriate allergen, histamine and other mediators are released. IgE antibody has been shown to correlate with atopic diseases such as allergic rhinitis and allergic asthma.(1-4) In the skin these mediators are responsible for the characteristic wheal and flare (erythema) reactions upon Allergenic Extract skin testing in persons with the specific allergies.(3-7)

Specific immunotherapy with Allergenic Extracts as employed for over 45 years is helpful in reducing symptoms associated with exposure to the offending allergens. A summary of effectiveness by the Panel on Review of Allergenic Extracts, an advisory committee to the U.S. Food and Drug Administration, has been published.(8) Several mechanisms have been proposed to explain the effectiveness of immunotherapy: an increase in antigen-specific IgG antibodies is frequently associated with clinical effectiveness, although correlation is not consistent in all studies; there is a decrease in specific IgE; and IgE production is suppressed during periods of seasonal or high exposure to the antigen.(9) Other changes following immunotherapy have been noted including development of auto-anti-idiotypic antibodies; a decrease in blood basophil sensitivity to allergen; a decrease in lymphokine production and lymphocyte proliferation by cells exposed to allergen; and development of allergen-specific suppressor cells.(10) The complete mechanisms of immunotherapy are not known and remain the subject of investigation.

INDICATIONS AND USAGE

Allergenic Extracts are indicated for the diagnosis and treatment of patients with immediate hypersensitivity allergy to the respective allergens, inhaled, ingested, or otherwise introduced into contact with sensitive tissues. The diagnosis of IgE-mediated allergy may be established by the allergy history, clinical evaluation, and skin test reactivity.(4,7,11) Immunotherapy with Allergenic Extracts is indicated when testing and patient history have identified the offending allergens and when it is not possible or practical to avoid these allergens.(12-14) Food extracts have not been proven effective in immunotherapy.

The use of Allergenic Extracts for the above purposes should be made only by physicians with special familiarity and knowledge of allergy. (See DOSAGE AND ADMINISTRATION.)

CONTRAINDICATIONS

There are no known absolute contraindications to the use of Allergenic Extracts for immunotherapy. Immunotherapy with specific antigens should not be done in those individuals who do not exhibit skin test or clinical sensitivity to the particular antigens. (See below under WARNINGS and PRECAUTIONS.)

Allergenic extract injections should not be administered in the presence of diseases characterized by a bleeding diathesis.

Children with nephrotic syndrome require careful consideration and probably should not receive injection therapy because a variety of seemingly unrelated events, such as immunization, can cause an exacerbation of their nephrotic disease.

General contraindications include:

EXTREME SENSITIVITY TO THE SPECIFIC ALLERGEN - Determined from previous anaphylaxis following exposure.

AUTOIMMUNE DISEASE - Individuals with autoimmune disease may be at risk, due to the possibility of routine immunizations exacerbating symptoms of the underlying disease.

WARNINGS

Concentrated extracts must be diluted with a sterile diluent prior to first use on a patient for treatment or intradermal testing. Allergenic Extracts are manufactured to assure high potency and have the ability during skin testing and immunotherapy to cause serious local and systemic reactions including death in sensitive patients. Most reactions occur within 20 minutes after injection,(15) but may occur later.(16) To minimize the potential for local or systemic reactions, the relative sensitivity of the patient must be assessed from the allergic history and from clinical observations. Patients should be informed of these risks prior to skin testing and immunotherapy (see PRECAUTIONS and ADVERSE REACTIONS below).

Allergenic Extract immunotherapy doses should be lowered or temporarily withheld from patients if any of the following conditions exist:

(1) severe symptoms of rhinitis and/or asthma

(2) infection or flu accompanied by fever

(3) exposure to excessive amounts of clinically relevant allergen prior to a scheduled injection

(4) evidence of a local or systemic reaction to the preceding extract injection during a course of immunotherapy.

The dosage must be reduced when modifying dosages or components in a mixture or an individual prescription, or when starting a patient on fresh extract, even though the labeled strength of the old and new vials may be the same. This reduction in dosage may be necessary due to the older vial losing potency during storage, or due to different sensitivities to different components. The amount of new extract given should not exceed 25% of the last dose given from the old vial, assuming both extracts contain comparable amounts of allergen. Any evidence of a local or generalized reaction requires a reduction in dosage during the initial stages of immunotherapy, as well as during maintenance therapy.

PRECAUTIONS

GENERAL:

Not for intravenous use!

Systemic allergic reactions may occur as a result of immunotherapy. The risk can be minimized by adherence to a careful injection schedule, which starts with a low concentration of extract and is increased slowly.

Because of the danger of serious reactions, caution is needed in testing exquisitely sensitive patients, particularly with potent allergens, e.g., peanut, cottonseed, and flaxseed.(8) Such extracts should be appropriately diluted before use.

The physician must be prepared to treat anaphylaxis should it occur and have the necessary drugs and equipment on hand to do so.(17-18) Extracts should not be administered by the patient or other individuals who are not prepared to treat anaphylaxis should it occur.

Patients receiving Allergenic Extracts should be kept under observation a minimum of twenty (20) minutes so that any adverse reaction can be observed and properly handled.(15) This time should be extended for high-risk patients such as those with unstable asthma or those suffering an exacerbation of their symptoms.

Patients receiving beta blockers may not be responsive to beta adrenergic drugs used to treat anaphylaxis. The risks of anaphylaxis in these patients should be carefully weighed against the benefits of immunotherapy.

Check the lot number and dosage schedule of the patient to verify correctness of a prescription number, a vial number, or strength. Only after this verification has been made should an injection be given.

A separate sterile needle and syringe should be used for each patient to prevent transmission of hepatitis or other infectious agents.

INFORMATION FOR PATIENTS:

Most serious reactions following the administration of Allergenic Extracts occur within 20 minutes; the patient should remain under observation for this period of time or longer if instructed by the physician. The size of any local reaction should be recorded, because increasingly large local reactions may precede a subsequent systemic reaction with increasing dosage. The patient should be instructed to report any unusual reactions. In particular, this includes unusual swelling and/or tenderness at the injection site, or reactions such as rhinorrhea, sneezing, coughing, wheezing, shortness of breath, nausea, dizziness, or faintness. Reactions may occur some time after leaving the physician's office, in which case medical attention should be sought immediately.

DRUG INTERACTIONS: Skin test diagnosis with Allergenic Extracts is contraindicated within 24 hours after the last dose of most antihistamines, within 48 hours after the last dose of terfenadine, and within 3 weeks or longer after the last dose of astemizole. These products suppress histamine skin test reactions and could mask a positive response.

CARCINOGENESIS, MUTAGENESIS, IMPAIRMENT OF FERTILITY: There is no evidence of carcinogenicity, mutagenesis, or impairment of fertility in humans from Allergenic Extracts. No long-term studies in animals have been performed to evaluate carcinogenic potential.

PREGNANCY: PREGNANCY CATEGORY C - Animal reproduction studies have not been conducted with Allergenic Extracts. It is also not known whether Allergenic Extracts can cause fetal harm when administered to a pregnant woman or whether they can affect reproduction capacity. Allergenic Extracts should be given to a pregnant woman only if clearly needed.

There is no evidence of adverse effects of Allergenic Extracts on the fetus.(8) Studies have not been performed in animals to determine

whether extracts affect fertility in males or females, have teratogenic potential, or have other adverse effects on the fetus. Caution should be exercised in testing or treating pregnant females because a systemic reaction may cause an abortion as a result of uterine muscle contractions.

LABOR AND DELIVERY: There is no known information of adverse effects during labor and delivery.

NURSING MOTHERS: It is not known whether this product is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when extracts are administered to a nursing woman.

PEDIATRIC AND GERIATRIC USE: Although most extracts have not been studied systematically in children, children and geriatric patients appear to tolerate injections of Allergenic Extracts well. Studies with pollenosis and asthma have been conducted in children (e.g. Refs. 19-21). Extract usage in children should follow the same precautions as in adults.

ADVERSE REACTIONS

Adverse systemic reactions may occur within minutes upon use of an Allergenic Extract to which a person has specific sensitivity. These reactions consist primarily of allergic symptoms such as generalized skin erythema, urticaria, pruritis angioedema, rhinitis, wheezing, laryngeal edema, and hypotension. Less commonly, nausea, emesis, abdominal cramps, diarrhea and uterine contractions may occur. Severe reactions may cause shock and loss of consciousness. Fatalities have occurred rarely.(8,22,23) These systemic reactions occur with varying frequency in different clinics and are usually less than 1%. To some extent, the reaction rate is related to the type and dose of administered extract and to the sensitivity of the patient. In general, immunotherapy with Allergenic Extracts is considered to be safe.(24) Despite all precautions, occasional reactions are unavoidable.

Adverse systemic reactions should be treated as follows:

A. A tourniquet should be immediately applied to the extremity above the site of the injection. Release the tourniquet every few minutes for a few seconds.

B. Epinephrine 1:1000 should be injected immediately in the opposite arm in amounts of 0.3 to 0.5 mL and 0.2 mL epinephrine should be administered at the site of injection. For children below the age of 6 years, adjust the dosage of epinephrine to 0.005 mL per pound of body weight per dose. Repeat epinephrine dosage in 15 minutes if necessary and if symptoms persist.

C. Adverse reactions not responding to epinephrine therapy may require the use of parenteral bronchodilators, vasopressors, oxygen, or volume replacement therapy.

Local reactions consisting of erythema, itching, swelling, tenderness and sometimes pain may occur at the injection site. These reactions may appear within a few minutes to hours and persist for several days. Local cold applications and oral antihistamines may be effective treatment. For marked and prolonged local reactions, steroids may be helpful.

ALLERGENIC EXTRACTS FOR DIAGNOSTIC USE ONLY

Scratch, Prick, Puncture or Intradermal Testing

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WARNING

THIS ALLERGENIC PRODUCT IS INTENDED FOR DIAGNOSTIC USE ONLY. THIS PRODUCT IS INTENDED FOR USE BY PHYSICIANS WHO ARE EXPERIENCED IN THE ADMINISTRATION OF ALLERGENIC EXTRACTS AND THE EMERGENCY CARE OF ANAPHYLAXIS, OR FOR USE UNDER THE GUIDANCE OF AN ALLERGY SPECIALIST. ALLERGENIC EXTRACTS MAY CAUSE SEVERE OR FATAL ANAPHYLAXIS IN EXTREMELY SENSITIVE PATIENTS. THIS PRODUCT SHOULD NOT BE INJECTED INTRAVENOUSLY. REFER ALSO TO THE WARNINGS, PRECAUTIONS, ADVERSE REACTIONS AND OVERDOSAGE SECTION BELOW.

DESCRIPTION

Allergenic Extracts intended for diagnostic skin testing are for scratch, prick, puncture or intradermal use only. The extracts are supplied as sterile solutions which contain the soluble extractants of the allergen source material in a buffered saline solution with or without glycerin (50% v/v) added as a stabilizer. Concentrated aqueous extracts contain the soluble extractants of the source material with 0.5% sodium chloride and 0.54% sodium bicarbonate at a pH of 6.8 to 8.4 in water for injection. Dilutions of aqueous extracts are made with buffered saline (0.5% sodium chloride, 0.04% potassium phosphate, 0.11% sodium phosphate heptahydrate, and 0.4% phenol in water for injection). Glycerinated extracts are concentrated aqueous extracts diluted to 50% v/v with USP Glycerin. Aqueous extracts contain 0.4% phenol as a preservative (0.2% phenol if glycerinated). Certain food extracts contain 0.1% sodium formaldehyde sulfoxylate as an antioxidant. Extracted source material substances are obtained as near as possible in the naturally occurring form to which a patient may be exposed.

Extracts labeled for diagnostic use only include the following foods: Barley, Coffee, Oat, Pineapple, Rye, Spinach, and Wheat. Other extracts for diagnostic only are Flea, House Fly, Mosquito, Moth, Cottonseed, and Flax Seed.

Extracts are labeled either by weight-to-volume (w/v) based on the weight of the source material to the volume of the extracting fluid, or in protein nitrogen units (PNU) based on assay with one PNU representing 10 micrograms of protein nitrogen. (See separate package inserts for standardized extracts such as cat hair, mite, or ragweed.)

CLINICAL PHARMACOLOGY

Allergen specific skin test reactions are mediated by specific immunoglobulin E (IgE) antibodies on the surface of mast cells. Interaction of allergens with cell-bound IgE induces cross linking of the IgE receptor which triggers the release of inflammatory mediators, particularly histamine. The characteristic mediator-induced induration (wheal) and erythema (flare) reaction observed upon diagnostic skin testing is an indication of specific allergy.[1] Allergen pharmacokinetics have not been characterized.

INDICATIONS AND USAGE

FOR DIAGNOSTIC USE ONLY - Allergenic Extracts are indicated for skin test assessment of the allergic state in patients with suspected IgE-mediated, immediate hypersensitivity allergy to the respective allergens when inhaled, ingested, or otherwise introduced into contact with sensitive tissues. The diagnosis of allergy may be established by the allergy history, clinical evaluation, and skin test reactivity.There are no reported limitations such as age group or progression of disease.

Extracts labeled FOR DIAGNOSTIC USE ONLY have not been shown by adequate data to be safe and effective for therapeutic use.

The use of Allergenic Extracts for the above purposes should be made only by physicians with special familiarity and knowledge of allergy. (See DOSAGE AND ADMINISTRATION)

CONTRAINDICATIONS

There are no known absolute contraindications to the use of Allergenic Extracts for skin test diagnosis.

Use of diagnostic extracts may be contraindicated in individuals with bleeding disorders or skin disease.

Skin test reactions can be suppressed when patients have received antihistamine medications within 24 hours, within 48 hours for terfenadine, or within 21 days or longer for astemizole. See DRUG INTERACTIONS.

WARNINGS

Concentrated extracts must be diluted with a sterile diluent (such as normal saline, buffered saline, saline with human serum albumin, or saline with 10% glycerin) prior to use in a patient for intradermal testing. Concentrates of Allergenic Extracts are manufactured to assure high potency and have the ability to cause serious local and systemic reactions including death in sensitive patients. Most reactions occur within 20 minutes after injection, but may occur later. To minimize the potential for local or systemic reactions, the relative sensitivity of the patient must be assessed from the allergic history and from clinical observations. Patients should be informed of the possibility of these reactions and the precautions should be discussed prior to testing (see PRECAUTIONS and ADVERSE REACTIONS below).

PRECAUTIONS

GENERAL

Not for intravenous or intramuscular use!

Systemic allergic reactions may occur as a result of the use of Allergenic Extracts. The physician must be prepared to treat anaphylaxis should it occur and have the necessary drugs, such as epinephrine, and equipment on hand to do so. Extracts should not be administered by individuals who are not prepared to treat anaphylaxis should it occur.[2]

A separate, sterile testing device, or needle and syringe, must be used to prevent the transmission of hepatitis or other infectious agents from person to person. Needles should not be recapped and should be disposed of properly.

INFORMATION FOR PATIENTS

The patient should be adequately informed of typical reactions to be expected as a result of diagnostic testing. Because most serious reactions following the administration of allergenic extracts occur within 20 minutes, the patient should remain under observation for this period of time or to 30 minutes or longer if instructed by the physician, such as for high-risk patients with unstable asthma, those with a history or reactions on injection, or patients suffering an exacerbation of their symptoms.[2] The patient should be instructed to report any unusual reactions. In particular, this includes unusual swelling and/or tenderness at the test site or reactions such as rhinorrhea, sneezing, coughing, wheezing, shortness of breath, nausea, dizziness or faintness. Reactions may occur some time after leaving the physician's office, in which case medical attention should be sought immediately.

DRUG INTERACTIONS

Skin test diagnosis with Allergenic Extracts may result in false negative responses if used within 24 hours after the last dose of most antihistamines, within 48 hours after the last dose of terfenadine, and within 3 weeks or longer after the last dose of astemizole. These products suppress histamine skin test reactions and could mask a positive response. The suppressive action of other drugs should be considered and emphasizes the need for a histamine positive-control test.[1]

Patients receiving beta blocker drugs may not be responsive to beta adrenergic drugs used to treat anaphylaxis. The risks of anaphylaxis in these patients should be weighed against the benefits of diagnostic skin testing.

CARCINOGENESIS, MUTAGENESIS, IMPAIRMENT OF FERTILITY

There is no evidence of carcinogenicity, mutagenesis or impairment of fertility in humans from allergenic extracts. No long-term studies in animals have been performed to evaluate carcinogenic potential.

PREGNANCY

TERATOGENIC EFFECTS

PREGNANCY CATEGORY C - Animal reproduction studies have not been conducted with Allergenic Extracts for Diagnostic Use Only. It is also not known whether Allergenic Extracts can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Allergenic Extracts should be given to a pregnant woman only if clearly needed.

LABOR AND DELIVERY

There is no known information of adverse effects during labor and delivery. Caution should be exercised in testing pregnant females because a systemic reaction may cause an abortion as a result of uterine muscle contractions.

NURSING MOTHERS

It is not known whether this product is excreted in human milk. Because many

drugs are excreted in human milk, caution should be exercised when extracts are administered to a nursing woman.

PEDIATRIC AND GERIATRIC USE

Although most Allergenic Extracts have not been studied systematically in children, children and geriatric patients appear to tolerate injections of Allergenic Extracts well. Extract usage in children should follow the same precautions as in adults.

ADVERSE REACTIONS

Adverse systemic reactions usually occur within minutes and consist primarily of allergic symptoms such as generalized skin erythema, urticaria, pruritus, angioedema, rhinitis, wheezing, laryngeal edema and hypotension. Less commonly, nausea, emesis, abdominal cramps, diarrhea and uterine contractions may occur. Severe reactions may cause shock and loss of consciousness. Fatalities have occurred rarely. The reaction rate is related to the type and dose of administered extract and to the degree of sensitivity of the patient; severe systemic reactions are not common with skin test diagnosis, but do occur. Despite all precautions occasional reactions are unavoidable.

Adverse systemic reactions should be treated as follows:

A. If the testing site was an extremity a tourniquet should be immediately applied above the site. Release the tourniquet every few minutes for a few seconds.
B. Epinephrine 1:1000 should be injected immediately in the opposite arm in amounts of 0.3 to 0.5 mL and 0.2 mL epinephrine should be administered at the site of injection. For children below the age of 6 years, adjust the dosage of epinephrine to 0.005 mL per pound (0.01 mL/kg) of body weight per dose. Repeat epinephrine dosage in 15 minutes if necessary and if symptoms persist.
C. Adverse reactions not responding to epinephrine therapy may require other measures such as the use of parenteral bronchodialators, vasopressors, oxygen, or volume replacement therapy. Proper equipment and trained personnel should be available.[2]

Local reactions consisting of erythema, itching, swelling, tenderness and sometimes pain may occur as a result of testing. These reactions may appear within a few minutes to hours and persist for several days. Local cold applications and oral antihistamines may be effective treatment. For marked and prolonged local reactions, steroids may be helpful.

OVERDOSAGE

Systemic reactions are uncommon after testing, but if the patient receives more extract than can be tolerated at that particular time and begins to experience immediate hypersensitivity anaphylaxis, the procedures listed under ADVERSE REACTIONS should be instituted.

Overdosage may occur because of an error in the volume of extract used, or an incorrect dilution, or because the patient may be exposed to antigens simultaneously to testing with the same antigens.

DOSAGE AND ADMINISTRATION

TECHNIQUES

The most frequently used test sites are the back and the volar surface of the forearms. The skin should be cleansed with alcohol and allowed to dry. A minimum of at least 1 inch should be allowed between test sites, and preferably 2 inches between sites for pollens. A marking pencil may be used to indicate the site locations.

A sterile puncture device, needle, scalpel blade, or scarifier is used. A separate sterile device must be used for each patient to prevent transmission of infectious agents. If the device contacts extracts, use a separate device for each antigen to prevent cross-contamination.

The skin is abraded only enough to enter the dermis without drawing blood. Follow the directions for the device being used. The antigen may be applied directly with a puncture device or is introduced by applying a drop of extract to the scratch or prick site, taking care not to touch the skin with the dropper tip.

The number of tests that can be performed at one sitting depends upon the sensitivity of the patient and other clinical aspects. Normally, 30 to 40 tests administered at one time should be sufficient. For patients of extreme sensitivity, it is advisable to limit the number of tests to not more than 10, and use the forearm only so that a tourniquet can be applied in the event of a severe reaction.

For the patient with a suspected diagnosis of allergy to more than one antigen, initial skin testing should include the individual extracts. If a screening skin test with a mixture is used, a positive response should be followed by testing with the individual extracts to determine the degree of sensitivity to each. However, because a negative skin test with a mixture may not be indicative of the absence of allergy to one or more of the components due to their dilution, testing with individual extracts is more precise. False negative responses may occur if serum levels of antihistamines remain from prior medication administration (See DRUG INTERACTIONS). The use of a positive control is especially recommended for patients on prior medications which may decrease the histamine skin test response.

Initial testing may be conducted with the concentrate by means of a puncture test employing a multiple puncture device or other appropriate instrument. Prick testing through a drop of extract or scratch testing with a drop of extract applied to the scratch may also be employed to determine the degree of sensitivity. If a large whealing reaction occurs prior to the 20-minute period, wipe the area free of extract with an alcohol sponge. After final readings, all antigens should be removed by gently wiping with an alcohol sponge or sterile cotton swab. If the response is negative, this initial test may be followed by intradermal testing which should be correlated with the clinical history.

1. Scratch or Prick-puncture Skin Testing:
   Scratch and Prick-puncture testing normally is performed with 1:20 w/v extracts in 50% glycerin or the strongest available strength in 5 mL vials for diagnostic use. Prick-puncture tests with concentrated extracts in

patients highly sensitive to the specific antigen should yield distinctive wheals with diameters of greater than 5 mm and with much larger erythma reactions. Glycerinated histamine phosphate 5 mg/mL (1.8 mg/mL histamine base) or aqueous histamine phosphate 2.75 mg/mL (1 mg/mL histmine base; 1:1,000 w/v) may be used as a positive control.

2. Intradermal Skin Testing:
   Extracts for intradermal testing may be purchased or be prepared by diluting the stock concentrate injection vials with sterile diluent (use normal or buffered saline, normal saline with human serum albumin, or normal saline with glycerin).

To prepare dilutions starting from a concentrate such as 1:10 w/v, 1:20 w/v, or 20,000 PNU/mL, proceed as in the table below. (Note: Add 0.5 mL of concentrate to 4.5 mL of sterile diluent and make additional dilutions in the same manner.)

TABLE 1

Ten-Fold Dilution Series*

Dilution	Extract	Diluent	w/v	w/v	PNU/mL
0	Concentrate		1:10	1:20	20,000
1	0.5mL concentrate	4.5 mL	1:10	1:200	2,000
2	0.5mL dilution 1	4.5 mL	1:1,000	1:2,000	200
3	0.5mL dilution 2	4.5 mL	1:10,000	1:20,000	20
4	0.5mL dilution 3	4.5 mL	1:100,000	1:200,000	2
5	0.5mL dilution 4	4.5 mL	1:1,000,000	1:2,000,0000	0.2
6	0.5mL dilution 5	4.5 mL	1:10,000,000	1:20,000,000	0.02

*There is no direct potency correlation across the table between PNU and w/v.

A. Patients with a negative scratch or prick-puncture test:
   Patients with a negative scratch or prick-puncture test should be tested intradermally, using a 26 or 27 gauge 1/4 inch needle, with 0.02 to 0.05mL of an appropriate extract dilution of 1/100 to 1/1000 of the concentrate.

B. Patients tested only by the intradermal method:
   Since highly reactive individuals may react intracutaneously at high dilutions, it is normally recommended that any intradermal injection should be preceded by and the dose adjusted according to puncture test reactivity. Patients suspected of being highly allergic should be tested with 0.02 to 0.05 mL of an appropriate extract dilution on the order of 1/10,000 to 1/100,000 or higher dilution of the concentrate.

C. Skin test titration:
   A negative test should be followed by repeat skin test titration dosages using progressively stronger ten-fold concentrations until significant wheal and flare reaction sizes are attained, or until skin test responses with the higher concentrations remain negative.

D. Controls:
   As a negative control use the diluent or, in case of extracts in 50% glycerin, use 0.5% to 1% glycero saline solution. As a positive control, use glycernated histamine phosphate diluted to 0.5 mg/mL (0.18 mg/mL histamine base) or aqueous histamine phosphate 0.275 mg/mL (0.1 mg/mL histamine base).

RESPONSES

Tests should be read 15 to 20 minutes after application of the test antigens. One means for reporting test results is the "plus" system:

– no reaction or reaction not greater than control
1+ erythema smaller than 21 mm
2+ erythema larger than 21 mm with no wheal
3+ erythema and wheal
4+ erythema and wheal with pseudopods

Other systems for reporting positive results include measuring the largest erythema or wheal diameter, or the sum of the orthogonal diameters of the erythema or wheal. Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration, whenever solution and container permit. Some concentrated extracts naturally develop a cloudy appearance over time under refrigeration, the material settling to the bottom on standing.

HOW SUPPLIED

Scratch tests in 50% glycerin (v/v) are supplied at 1:20 w/v (or lesser strengths for selected extracts) in 5 mL vials only. Concentrates (which must be diluted for intradermal testing) are supplied in aqueous or 50% v/v glycerin solutions containing 10,000, 20,000, or 40,000 PNU/mL and 1:10, 1:20, 1:40, or 1:100 w/v, in 10, 30, and 50 mL vials. Dilutions for intradermal testing are available in 5 mL vials at 1,000 PNU/mL or 1:1000 w/v. (See separate package inserts for standardized extracts such as cat hair, mite, or ragweed.)

STORAGE AND EXPIRATION DATING: Allergenic Extracts should be stored at 2-8 degrees C and kept at this range during office use. Refer to the vial label for the expiration date of the extract. Diluted extracts are inherently less stable than the concentrates. Dilutions of glycerinated extracts which result in a glycerin content of less than 50% are also less stable. Highly-diluted aqueous extracts should be replenished daily. Potency of a particular dilution can be checked by skin test in comparison to a fresh dilution of the extract on an individual known to be allergic to the specific antigen.

REFERENCES

1 Bousquet, J., Michel, F.B.: In vivo methods for study of allergy. "*Allergy Principles & Practice*," 4th ed., Eds: Middleton, E., Reed, C.E., Ellis, E.F., et al., Mosby, St. Louis, 1993, 573 ff.

2 Board of Directors: American Academy of Allergy and Immunology. Guidelines to minimize the risk from systemic reactions caused by immunotherapy with allergenic extracts. (Position statement). J. *Allergy and Clin. Immunol.* 1994; 93:811-12.

GH APR04

L-501
Rev 04/04

Greer*Pick*™

Optimized Skin Testing System

GREER™
PO Box 800
Lenoir, NC 28645
USA

ALLERGY SKIN TEST SYSTEM

The Greer*Pick*™ system is an easy to use, economical system for skin testing of suspected allergic individuals to determine specific allergen sensitivity. The system is designed for use by allergy practitioners who are trained in the application and interpretation of allergy skin tests, and who are trained in the recognition and treatment of adverse allergic reactions should they occur. Before employing the system, users should fully familiarize themselves with the instructions contained herein, and any pertinent data and warnings regarding test antigens.

The system is comprised of the following components as illustrated in *Figure 1* below:

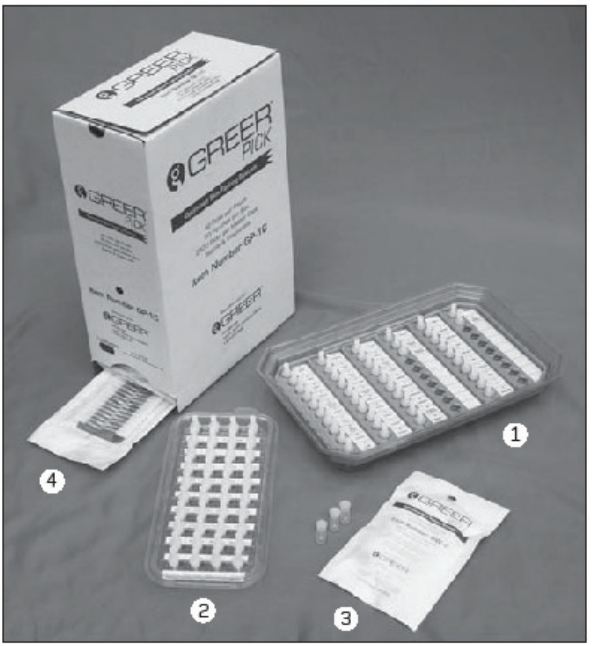

Figure 1

1. The 60-well Greer *Tray*™, a larger tray that has a maximum of 60 well positions for test antigens.
2. The 40-well Greer *Tray*™, a medium size tray that has a maximum of 40 well positions for test antigens.
3. The Greer *Wells*™, supplied in sterile packs and designed to contain the antigens for skin testing.
4. The Greer *Picks*™, supplied in sterile packs and designed for the application of test antigens to the skin, and to serve as a cap to the Greer *Wells*™ when not in use.

PREPARATION OF THE SYSTEM FOR USE

Each Greer *Tray*,™ is supplied with labels ruled to correspond to the well positions in the tray. Labels should be used to identify the antigens contained in the wells.

Greer *Wells*™ are supplied in packs of 24. Using aseptic procedures, open the pack carefully and place the wells in each of the positions to be filled with skin test antigens in the Greer *Tray*.™ Press the wells firmly into place.

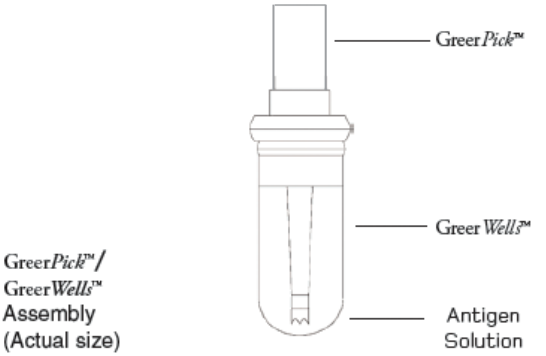

Figure 2 (diagram)

Fill each Greer *Well*™ with approximately 0.125 mL of the appropriate extract as shown in *Figure 2*. Pay careful attention to assure that the antigens in the wells correspond with the labels on the tray. It is strongly recommended that glycerinated extracts containing a phenol preservative be used to inhibit microbial growth.

Greer *Picks*™ are supplied sterile in trays of 42. Greer *Picks*™ should be inserted into the Greer *Wells*™ immediately after filling to prevent the entry of foreign matter. Handle the Greer *Picks*™ only by the larger handle end and take care not to contaminate or damage the small end which contacts the patient's skin. Once the Greer *Tray*™ is labeled, loaded with antigens, and the Greer *Picks*™ are inserted, the system is ready for use. Store the system in the refrigerator at all times when not in use to maintain antigenic potency.

When the wells are emptied they should be discarded and replaced with new sterile wells loaded with the appropriate fresh antigens. This practice will help ensure antigen potency. Empty wells can be identified by viewing the Greer *Tray*™ from beneath by holding the tray overhead. To remove empty Greer *Wells*™ from the Greer *Tray*™ simply lift upward and discard. Replace and refill as above.

SKIN TESTING WITH THE GREER*Pick*™ SYSTEM

Allergy testing with the Greer *Pick*,™ as with any skin test device, requires that the proper technique be developed and used. Proper contact between the device and the skin is required to ensure that the antigen bearing tines of the device penetrate, scarify or prick the epidermis to deliver the antigen to the underlying reactive dermis layer of the skin. Proper test technique, however, will not cause bleeding. The prick technique is the recommended method for use of the Greer *Pick*.™

Using The Greer*Pick*™ as a Prick Test Device

Remove the Greer*Pick*™ from the Greer*Well*™ and briefly inspect to ensure that a small droplet of antigen is present at the tip of the device. Holding the Greer*Pick*™ at an approximate 45 degree angle to the skin at the test site, bring the tip of the Greer*Pick*™ in contact with the skin in the direction the Greer*Pick*™ is pointing. Press the tines making contact into the superficial skin, withdrawing with a slight lifting of the skin. A properly applied prick test will result in a small pricking of the epidermis, but will not result in bleeding or scarring. Discard the used device into a suitable biohazard container.

While the Prick method is the preferred method of use, Greer recognizes that health care providers may want to use other accepted techniques, which are described below:

Using The Greer*Pick*™ as a Puncture Test Device

Remove the Greer*Pick*™ from the Greer*Well*™ and briefly inspect to ensure that a small droplet of antigen is present at the tip of the device. Holding the Greer*Pick*™ perpendicular to the skin surface at the test site, firmly press the tines of the device into the skin. A properly performed test will leave six small indentations corresponding to the tines of the device, but will not result in bleeding or scarring. Discard the used device into a suitable biohazard container.

Using The Greer*Pick*™ as a Scratch Test Device

Remove the Greer*Pick*™ from the Greer*Well*™ and briefly inspect to ensure that a small droplet of antigen is present at the tip of the device. Holding the Greer*Pick*™ perpendicular to the skin at the test site, lightly touch the tip of the device to the skin ensuring that all six tines are in contact and simultaneously rotate the device approximately one-quarter turn. A properly applied scratch test will result in some abrasion of the epidermis but will not result in bleeding or scarring. Discard the used device into a suitable biohazard container.

It is recommended that technicians unfamiliar with the use of the device practice the different techniques using glycerinated histamine positive control and glycerinated negative control solution. A properly applied positive control should result in a wheal reaction of approximately 5 mm or greater, and an erythema (redness/flare) reaction of approximately 20 mm to 25 mm diameter in normally reactive individuals. As with any test, wide variations in patient reactivity are not uncommon.

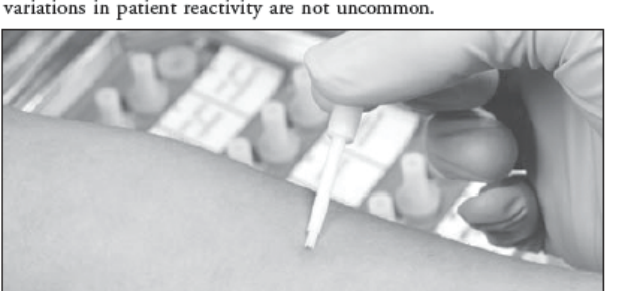

Figure 3

Skin testing is normally performed on the volar surface of the forearm and on the back. Sanitize the test sites with alcohol swabs, and mark the sites for reference. (See *Figure 3*) Test sites should be separated by approximately 3 cm (0.8 inches)* to prevent strong positive reactions from overlapping and causing difficulties in interpreting results.

** (JACI Position Statement, 1993; 92:636-7)*

After the test sites have been sanitized and marked, you may begin testing using the *testing method of your choice*: prick, puncture or scratch. Upon the completion of each test, a small amount of antigen solution will remain on the skin at the test site. Continue testing with the desired number of antigens, discarding the used Greer*Pick*™ into an appropriate biohazard container after each test. Place new Greer*Picks*™ in the Greer *Wells*™ as soon as possible to avoid contamination of the antigen in the wells. It is recommended that each patient be tested with both a positive (50% Glycerinated Histamine), and negative (50% Glycerinated saline) control in addition to the test antigens.

Greer*Pick*™ devices are single use only devices. To prevent the occurrence of antigen cross-contamination or the transfer of infectious agents, such as serum Hepatitis, DO NOT reuse the devices.

INTERPRETATION OF TEST RESULTS

Allergic individuals exhibit extreme variability in their reactions to test antigens, and it is important to judge the results of allergy skin tests in relation to both the positive and negative control tests. Careful consideration of patient history, current antigen exposure, and any recent use of interfering drugs such as antihistamines or beta-blockers should be considered. Readings of the test sites should be taken approximately 15 to 20 minutes after administration of the test antigens. Assessment of both the wheal (swelling and edema) and erythema (flare/redness) reactions should be conducted and recorded.

Reactions appearing less than or equal to the size of the negative control test are to be considered negative reactions. Reactions of wheal and/or erythema size exceeding those of the negative control test should be considered positive reactions. Various methods are in use for the grading of skin test reactions to allergens; a common scheme is presented below. It is important to note that individual patient reactivity can vary greatly with time, antigen potency, drug therapy and/or immunotherapy, as well as testing technique.

1+ Wheal, if present, equal to or larger than negative control reaction. Erythema larger than negative control, but less than 10 mm diameter.
2+ Wheal up to 7 mm diameter, and erythema up to 20 mm diameter.
3+ Wheal diameter up to 10 mm, and erythema larger than 20 mm diameter; pseudopodia may or may not be present.
4+ Wheal diameter larger than 10 mm, with pseudopodia, erythema as for 3 +.

Alternatively, test results may be recorded by noting the largest diameter of both wheal and erythema as well as the diameter of the reaction perpendicular to the largest reaction diameter. Thus, an approximate area for both wheal and erythema can be calculated. While some correlation exists between the size of patient reaction and the degree of sensitivity, other factors as mentioned above must be considered in the diagnosis of allergy to specific antigens.

HOW SUPPLIED

Item # GP-1C - 50 packs of 42 (2,100) Greer *Picks*™ (Sterile)
Item # GW-2 - 1 pack 24 Greer *Wells*™ (Sterile)
Item # GY-5 - 1 ea. 60-Well Greer *Tray*™ with labels
Item # GY-40 - 1 ea. 40-Well Greer *Tray*™ with labels

WE WELCOME YOUR QUESTIONS

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