# *ZELLEROMYCES GIENNENSIS* SP. NOV. (RUSSULALES), A GASTEROID FUNGUS FROM THE SOUTH OF SPAIN

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**SUMMARY** :*Zelleromyces giennensis* is proposed and described as a new species, including data on its taxonomy, ecology, morphology, anatomy and relationships with related species.

**KEY WORDS** : Russulales, Elasmomycetaceae, *Zelleromyces giennensis,* taxonomy, ecology, Spain.

**RESUMEN** : Se propone *Zelleromyces giennensis* como especie nueva para la ciencia, y se aportan datos sobre su taxonomía, ecología, morfología, anatomía, así como semejanzas y diferencias con especies próximas.

**PALABRAS CLAVE** : Russulales, Elasmomycetaceae, *Zelleromyces giennensis,* taxonomía, ecología, España.

**RÉSUMÉ** :*Zelleromyces giennensis* est proposé comme nouvelle espèce, avec l'apport de données sur la taxonomie, l'écologie, la morphologie, l'anatomie et les relations avec les taxa proches.

**MOTS-CLEFS** : Russulales, Elasmomycetaceae, *Zelleromyces giennensis,* taxonomie, ecologie, Espagne.

## INTRODUCTION

In previous papers (Calonge & Pegler, 1998; Moreno-Arroyo *et al.* 1998a, b) has been discussed the possible delimitation of the genus *Zelleromyces* Singer & A. H. Sm., in relation to *Martellia* Mattir. and *Gymnomyces* Massee & Rodway, and the key proposed by Beaton *et al.*(1984) is considered as the most suitable one to separate the genera of Elasmomycetaceae. The number of *Zelleromyces* species already described reaches the figure of 15, from which only two have been previously recorded in Spain, *Z. hispanicus* Calonge & Pegler (Calonge & Pegler, 1998) and *Z. meridionalis* Calonge, Moreno-Arroyo

& Gómez (Moreno-Arroyo *et al.* 1998a). The material studied here is preserved in Madrid (MA-Fungi) and in the personal senior author's herbarium (BM).

## DESCRIPTION

***Zelleromyces giennensis***, Moreno-Arroyo, Gómez & Calonge sp. nov. (Figs. 1-4)
Etym.:*giennensis,* belonging to the province of Jaen, S. Spain.

*Gasterocarpus 1-2.5 cm latus, subglobosus, vel lobatus, sessilis. Peridium album, deinde alutaceis, laeve, glabrum. Gleba alba, deinde alutacea, loculis irregulariter elongatis. Columella nulla. Sporae statismosporicae, 10-13 × 7-9 µm, ovoideae vel ellipsoideae, reticulatae amyloideae. Basidia 30-45 × 6-10 µm, cylindrica, 1-sporigera. Cystidia nulla. Trama hymenophoralis cum hyphae afibulatae, hyalinae. Peridium cum elementis laticiferis instructa. Sphaerocystis carens. Epicutis in trichodermium. Peridiopellis pseudoprosenchymatica. Hispania, Giennen, La Aliseda, subhypogeus, subter Pinus halepensis, 28-II-1994, legit J. Gómez et B. Moreno, MA-Fungi 38674 (Holotypus); BM 213.*

**Gasterocarp** 1-2.5 cm diam., subglobose, somewhat lobed, sessile (Fig. 1). **Peridium** whitish drying pale yellowish, smooth, matt. **Gleba** white drying yellowish, labyrinthoid, with locules irregularly arranged, empty or partially filled. **Columella** absent. **Basidiospores** 10-13 × 7-9 µm (incl. orn.), ellipsoid, rarely ovoid (Figs. 2-4), hyaline, with a myxosporium of continuous or interrupted ridges forming an incomplete reticulum (Figs. 3-4), strongly amyloid. **Basidia** 30-45 × 6-10 µm, cylindrical, 1-spored. **Sterigma** 3-5 µm long. **Subhymenium** pseudoparenchymatous. **Cystidia** absent. **Hymenophoral trama** made of hyaline hyphae, 3-6 µm diam., gelatinized, thin-walled, septate, clampless. Peridiopellis 150-200 µm, pseudoprosenchymatous, with gelatinized, agglutinated hyphae. **Epicutis** a trichodermium, with hyaline hyphae, 4-5 µm diam., septate, gelatinized. **Laticiferous elements**, 5-8 µm diam., only present in the peridium. **Sphaerocysts** absent.

Material studied: Spain, Jaen, La Aliseda, 600 m, subhypogeous, under *Pinus halepensis*, 30 basidiomata forming colonies, 28-II-1994, legit J. Gómez & B. Moreno, MA-Fungi 38674 (Holotypus); BM 213.

## DISCUSSION

*Zelleromyces giennensis* is a well-defined species with a series of characters not found in any other described taxon of this genus. Basidiospores subreticulate, ellipsoid; peridium with laticiferous hyphae; epicutis a trichodermium; basidia 1-spored, and columella, cystidia and sphaerocysts absent.

Other species with ellipsoid spores are: *Z. cinnabarinus* Singer & A. H. Sm., which has a cinnabar red peridium when fresh and broader spores (14-17 × 11-13 µm); *Z. oregonensis* Singer & A. H. Sm., with spiny spores (Singer & Smith, 1960). *Zelleromyces gardneri* (Zeller & Dodge) Singer & A. H. Sm., has spores similar to *Z. giennensis*, ellipsoid to ovoid, but shows a dendroid columella (Singer & Smith, 1960). Another Mediterranean species close to our material is *Z. josserandi* Malençon (Malençon, 1975), but with spores ovoid, basidia 4-spored and basidioma broader, 2-4 cm diam. The remaining species of *Zelleromyces* are remote from *Z. giennensis,* considering the taxonomic features.

Again, we have had difficulties in finding the appropriate genus for our collections, as commented upon in previous occasions (Moreno-Arroyo *et al.*, 1998a, b). However, the presence of reticulate spores, laticiferous hyphae in the peridium and absence of sphaerocysts induced us to include it within *Zelleromyces,* following Beaton *et al.* (1984) and Zhang & Yu (1990).

*Zelleromyces giennensis* seems to be a Mediterranean species associated with *Pinus halepensis,* being the third of a series of species recently found in Spain: *Z. hispanicus* Calonge & Pegler (Calonge & Pegler, 1998) growing under *Pinus sylvestris* and *Z. meridionalis* Calonge, Moreno-Arroyo & Gómez (Moreno-Arroyo *et al.,* 1998a) which grows under *Quercus ilex* subsp. *ballota.* It is expected that these fungi are widespread in our region and that new gasteroid Russulales will be found in future, as the attention and effort put in this subject is increased.

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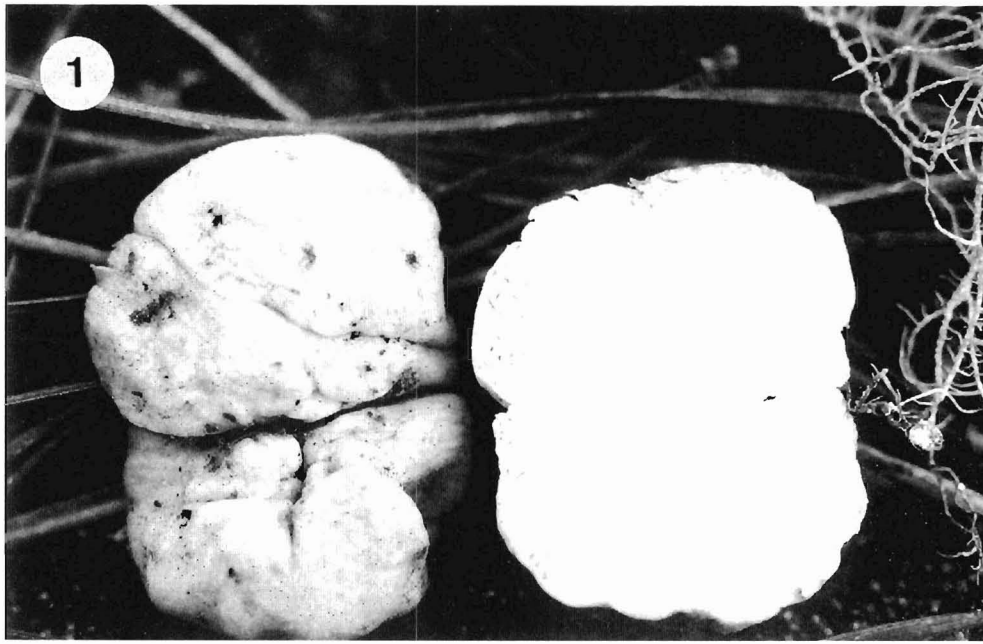


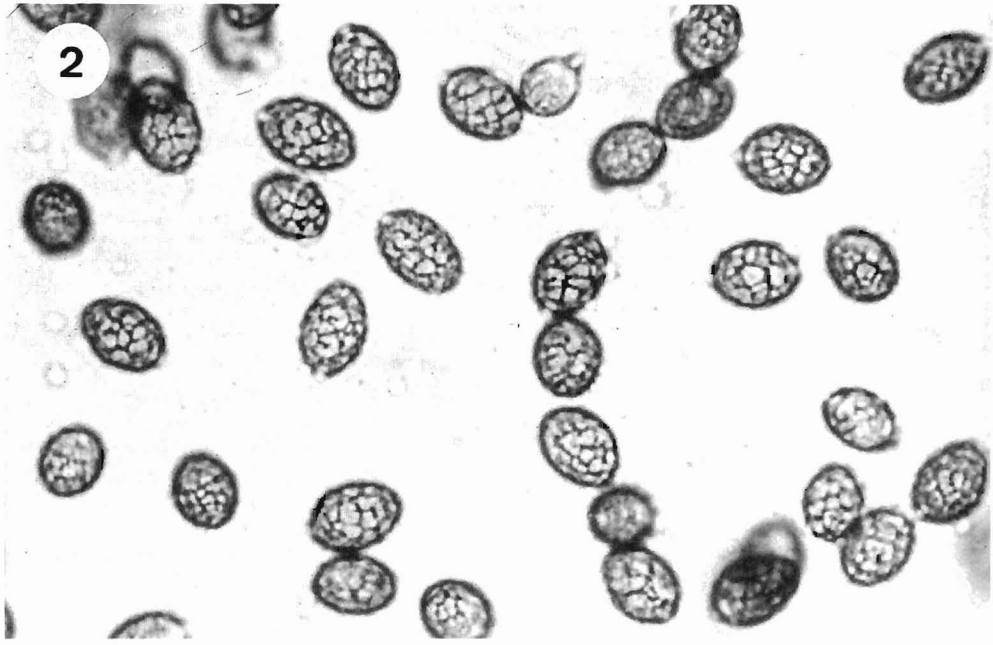
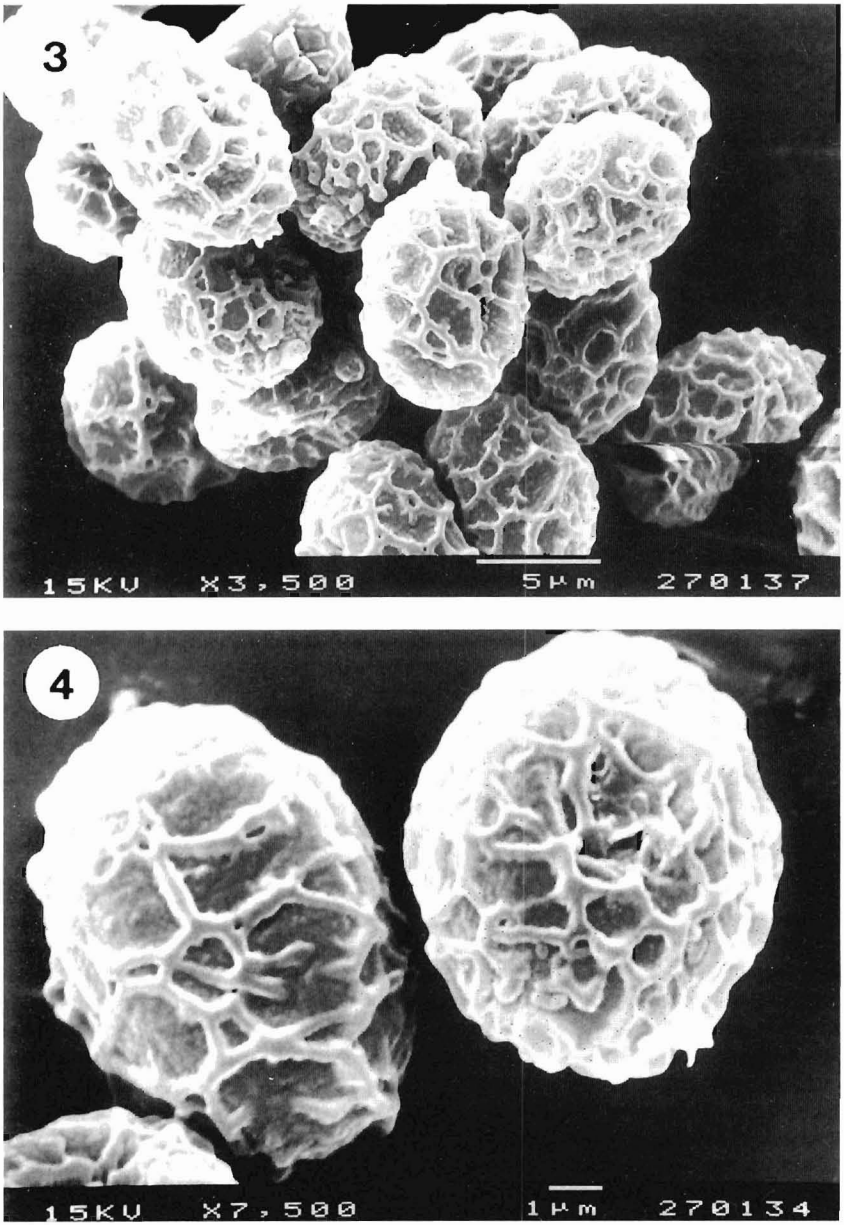




Fig. 1. — *Zelleromyces giennensis.* Basidiomata showing peridium and gleba. MA-Fungi 38674.
Fig. 2. — *Zelleromyces giennensis.* Basidiospores observed under the LM, after treatment with KOH. A typical subreticulate, amyloid myxosporium can be distinguished. MA-Fungi 38674.




Figs. 3-4. — *Zelleromyces giennensis.* Basidiospores observed under SEM at different magnification to see in more detail the subreticulate myxosporium. MA-Fungi 38674.