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New report of the mycorrhizal association between *Pisolithus tinctorius* (Sclerodermataceae, Basidiomycota) and *Quercus coccifera* (Fagaceae, Angiospermae)

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Abstract – In this paper we described for the first time the mycorrhiza between the fungus *Pisolithus tinctorius* and the kermes oak *Quercus coccifera*, obtained by inoculation. The synthesis was performed under nursery conditions using vegetative (40 mL/plant) or sporal (10⁸ spores/plant) inoculum of *P. tinctorius* basidiomata collected from two different locations and putative hosts, and containers filled with a sterile mixture of sphagnum peat/black peat/perlite+vermiculite. The mycorrhizal association is described and illustrated in detail and compared with other known *P. tinctorius* mycorrhiza. Mycorrhizae were monopodial-pinnate to pyramidal pinnate, cream to brown colour, mantle surface loosely woven, extramatrical mycelium abundant, rhizomorophs scarce and well differentiated, sclerotia frequent, subglobose to lemon-shaped, mantle plectenchymatous with three layers. The conditions of inoculation are also discussed. A beneficial effect of the mycorrhizal symbiosis on plant growth attributes is suggested.

mycorrhiza / sclerotia / rhizomorph / inoculum / *Pisolithus* / kermes oak

INTRODUCTION

Quercus coccifera L., the kermes oak, is a widely distributed shrub in the western Mediterranean basin, from Morocco to Greece. It grows under altitudes of 1000 m and is well adapted to the high temperatures and water stress conditions that characterize the Mediterranean climate. Therefore, it is used in the reforestation of disturbed lands in this area.

Quercus is considered to be an ectomycorrhizal genus and several studies describe the occurrence of ectomycorrhizae in a wide variety of species. Some have been reported to form mycorrhizae with the fungus *Pisolithus tinctorius* (Pers.) Coker & Couch, such as *Quercus alba* L. (Walker & McLaughlin, 1991), *Q. gambelli* × *Q. turbinata* (Walker, 1990), *Q. ilex* L. (de Roman & de Miguel, 2005), *Q. ilex* subsp. *ballota* (Desf.) Samp. (Domenech *et al.*, 2004), *Quercus myrsinaefolia* Blume (Tam & Griffiths, 1993), *Q. palustris* Münchh. (Maronek *et al.*, 1981), *Q. pyrenaica* Wild. (Duñabeitia *et al.*, 2004), the tropical *Q. serrata* Thunb. and *Q. acutissima* Carruth (Oh *et al.*, 1995), *Q. rubra* L. (Crunkilton *et al.*, 1992), *Q. suber* L. (Díez *et al.*, 2000) and *Q. virginiana* Mill. (Davies *et al.*, 1990). However, very little information is available about *Q. coccifera*, mainly in relation