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P56. Antioxidants in *Pinus Pinaster* and mycorrhizal fungi during the early steps of symbiosis

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Ectomycorrhizal symbiosis between fungi and the roots of some plants could have important effects in the levels of antioxidants of both partners [1,2]. In the present work, the effects of co-culture period (6, 24 and 72 h) in the antioxidant properties and antioxidants production during early steps of in vitro mycorrhization (*Pinus pinaster* - *Pisolithus arhizus* and *Pinus pinaster* - *Paxillus involutus*) were evaluated. The studied parameters were determined in each culture element (root, mycelium and medium) in order to understand the response of each partner to the symbiotic association. The antioxidant properties were determined by assays evaluating free radicals scavenging activity, reducing power, β -carotene bleaching inhibition and lipid peroxidation inhibition in animal brain homogenates. The concentrations in phenolics, tocopherols and sugars were obtained by *Folin Ciocalteus* assay, HPLC-fluorescence and HPLC-RI, respectively. *P. arhizus* proved to be more compatible with *P. pinaster* than *P. involutus*, since the antioxidant activity in the latter species increased from 48 to 72 h, while *P. arhizus* antioxidant properties decreased at the same period (less oxidative stress). Despite *P. involutus* proved to be less suitable to be included in forestation programs using mycorrhization processes, it revealed a higher potential for bioactive compounds production in the early steps of symbiosis. A maximal phenolics content was obtained after the first 6 h and, considering bioactive compounds production purposes, the co-culture should be stopped at that time. Tocopherols (except γ -tocopherol) contents showed high similarities among culture medium and mycelia. This tendency could not be observed regarding sugars contents, which might indicate that the differences in the chemical responses that characterize each mycorrhization might be related more directly with sugar (primary metabolites) exchanges.

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