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SIGNALLING PROCESS DURING THE EARLY CONTACT OF ECTOMYCORRHIZAL FUNGI PISOLITHUS TINCTORIUS WITH CASTANEA SATIVA ROOTS

Paula Baptista¹, Anabela Martins¹, Rui M. Tavares², Teresa Lino-Neto²

1. CIMO/Escola Superior Agrária de Bragança, Quinta de Sta. Apolónia, Apt. 1 172, Bragança, Portugal, 2. Departamento de Biologia/Centro de Biologia, Universidade do Minho, Campus de Gualtar, 4710-057 Braga, Portugal

Ectomycorrhizas (ECM) are symbiotic associations between roots of higher plants, mainly trees (e.g. Pinacea and Fagaceae), and soil fungi (asco- and basidiomycetes). The establishment of this symbiotic association requires a sequence of highly regulated and coordinated events, initiated by an exchange of specific signalling compounds between both partners. The triggering mechanisms and the progression of the colonization process are still not well understood. The present work focus on the signalling process occurring during the early contact of ectomycorrhizal fungi with Castanea sativa roots, using a model ECM fungus (Pisolithus tinctorius). Early contacts between symbionts were also observed by scanning electron microscopy. In previous work, we have evaluated the involvement of reactive oxygen species (ROS) during the first 48 h after P. tinctorius contact with C. sativa roots, in which three production peaks of H₂O₂ and two O²•- burst were detected. The effect of C. sativa root extracts in promoting ECM fungi growth was also evaluated by measuring the radial growth of P. tinctorius mycelium cultured in medium supplemented with crude extracts from C. sativa roots elicited with the same ECM fungi up to 48h. P. tinctorius growth is differentially stimulated in the presence of aqueous extracts from elicited C. sativa roots, and was significantly correlated with H₂O₂ production pattern. The results suggest that during the early stages of ECM establishment, H₂O₂ appears to be an important initial product and a serious candidate to act as a signal molecule during symbiotic development and might be a general strategy to enable successful colonization of the roots.

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