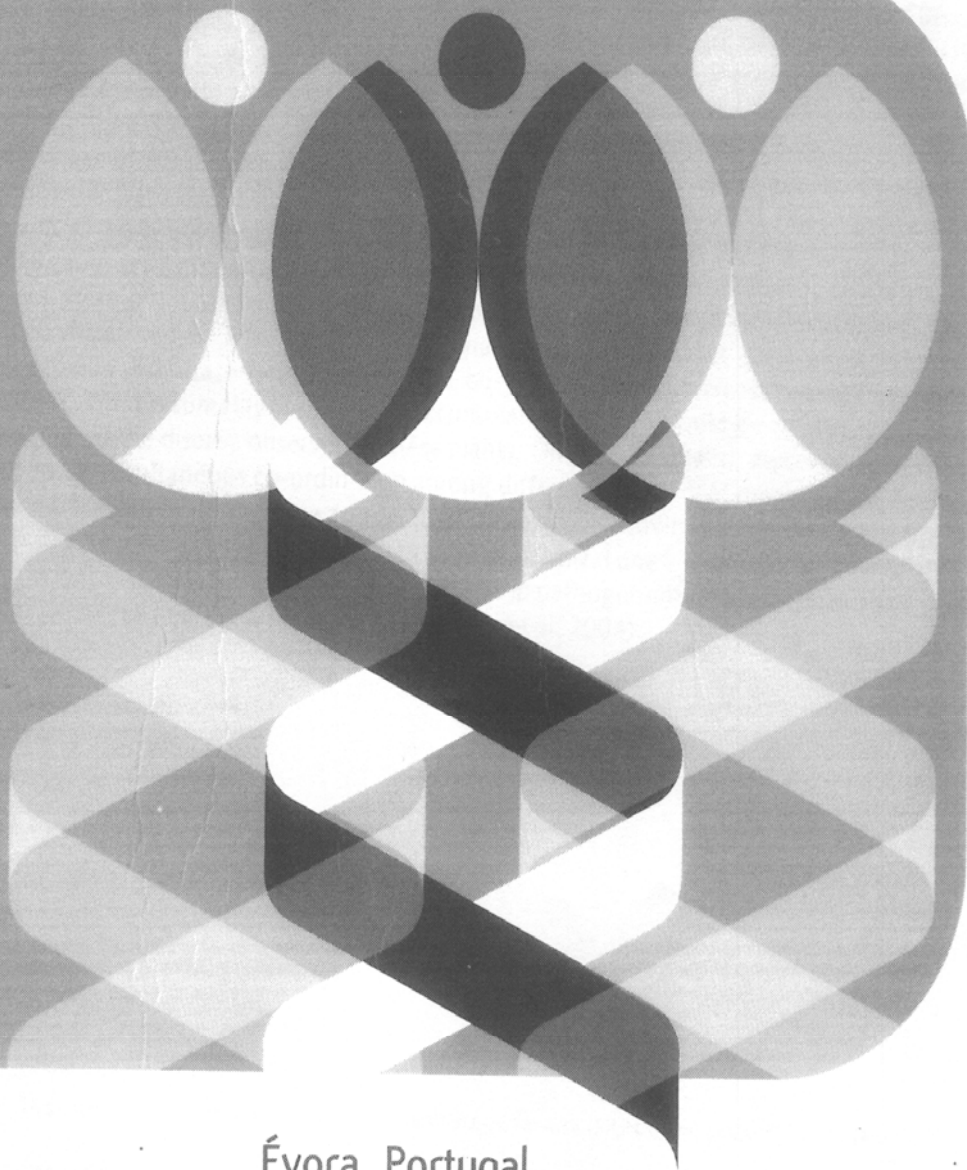


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ANTIOXIDANT METABOLISM IN ASYMPTOMATIC LEAVES  
OF VERTICILLIUM-INFECTED PEPPER ASSOCIATED  
WITH AN ARBUSCULAR MYCORRHIZAL FUNGUS

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The arbuscular mycorrhizal fungus (AMF) *Glomus deserticola* (Trappe, Bloss and Menge) can alleviate the deleterious effect of *Verticillium dahliae* Kleb. on the growth and yield of pepper when pathogen attack occurs during the vegetative stage of growth. As biotic stresses can alter the activity of reaction oxygen species scavenger enzymes, our first objective was to determine if *V. dahliae* caused biochemical changes in asymptomatic leaves even before the onset of first visible symptoms of the disease in plants, laying special emphasis on antioxidant enzymes. The second aim was to assess if AMF modified the metabolism in leaves of *Verticillium*-inoculated plants. Results showed that *V. dahliae* caused metabolic changes in asymptomatic leaves even before plants had developed disease symptoms, but there were some differences between non-mycorrhizal and mycorrhizal plants. Non-mycorrhizal pepper inoculated with the pathogen exhibited an early enhancement of superoxide dismutase (SOD) activity not co-ordinated with increases in any peroxidase activity. The presumably subsequent accumulation of  $H_2O_2$  could be related to the quick progress of the disease observed in these plants. On the other hand, mycorrhizal plants did not show simultaneous co-ordination among different antioxidant enzymes, but they had more balanced SOD, catalase and guaiacol peroxidase activities in leaves during the first month after pathogen inoculation than non-mycorrhizal ones. This fact could be related to the longer maintenance of photosynthetic rates in pathogen-infected plants associated with AMF observed in previous studies (Garmendia et al. 2004).

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