The effects of *Eucalyptus globulus* oils on fungal enzymatic activity

C. Canhoto\(^1\), F. Bärlocher\(^2\) and M. A. S. Graça\(^3\)

With 5 figures and 1 table

**Abstract:** The effects of *Eucalyptus globulus* oils on enzymatic activities and growth of aquatic hyphomycetes were assessed. Culture supernatants of *Flagellospora curta*, *F. penicilliioides*, *Heliscus lugdunensis*, *Lemonniera aquatica* and *Lunulospora curvula* were tested for activity against carboxymethylcellulose, pectin and xylan. Lipase and phenol-oxidase assays were performed on solid media. No lipase activity was detected in any of the species; eucalypt oils at concentrations up to 2.5% inhibited the other enzymes of all species except *H. lugdunensis*. Fungal growth on malt extract agar was totally inhibited when colonies were exposed to oil vapours. We suggest that eucalypt oils contain compounds that limit fungal growth, both by interfering with degradative enzymes and by affecting mycelial viability. In streams, fungal invasion of eucalypt leaves proceeds mainly through stomata. Fungal growth through the leaf’s mesophyll may be inhibited by the extended presence of oil vesicles, which could be partly responsible for the prolonged integrity of eucalypt leaves decaying in streams.

**Key words:** Aquatic hyphomycetes, fungal growth, enzyme inhibition, leaf decay, litter decomposition.

**Introduction**

Several studies on the effects of *Eucalyptus globulus* Labill. plantations on stream ecological processes have recently been conducted in the Iberian Peninsula (BASAGUREN & POZO 1994, CANHOTO & GRAÇA 1995, 1996, ABELHO & GRAÇA 1996, POZO et al. 1998). Decomposition rates of senescent eucalypt leaves seem to be affected by abiotic factors such as nutrient contents...