Crude extract of Trichoderma elicits agarwood substances in cell suspensionculture of the tropical tree, Aquilaria malaccensis Lam.

ABSTRACT

Agarwood is the precious fragrant wood produced by the tropical tree Aquilaria, often after elicitation by wounding or fungal attack. In this study we established a cell suspension culture of A. malaccensis from leaf-derived callus and induced agarwood production in the culture using fungal elicitors. Elicitors were made from crude mycelial extracts of two fungal species from the genera Trichoderma and Lasidiplodia. The elicitors were added to the cell suspension culture, initiated with 2 g of fresh calli, at concentrations ranging from 2 to 10 mg L-1. A light agarwood scent was detected from the suspension culture elicited with 8 mg L-1 Trichoderma extract. To increase scent intensity, cell suspension cultures were initiated from 2 to 8 g of calli and treated with 8 mg L-1 Trichoderma extract. The combination of 8 g of calli inoculum and 8 mg L-1 Trichoderma extract produced the most intense fragrance, one comparable to agarwood scent. The cell culture was harvested, extracted in methanol, and analyzed using GC-MS. Several important agarwood compounds were detected including 8-epi-.gama.-eudesmol, á-guaiene, and alloaromadendrene oxide-1. Trichoderma appeared to be a suitable inducer for agarwood production when used at an optimal concentration and in combination with a cell suspension culture of Aquilaria.

Keyword: Agarwood; Cell culture; Chemical constituents; Endangered tree; GC-MS; Thymelaeaceae