



Effects of Ethephon and Silver Nitrate on the Emission of Sesquiterpenes in *Aquilaria filaria* Cells Culture

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Abstract

Aquilaria filaria is a tropical forest tree which is able to produce fragrance resin called agarwood. Agarwood is used globally as raw material for perfumery industry. Agarwood scent come from the complex mixture of numerous compounds mainly sesquiterpenes (SQTs). Long term formation of high quality agarwood in *Aquilaria* plant lead to the development of research in plant biotechnology through plant cells suspension culture to produce plant agarwood sesquiterpenes *in vitro*. This research aimed to study the effects of ethephon, an ethylene releasing compound, on the emission of agarwood SQTs in *in vitro* cells culture of *A. filaria*. Silver nitrate (AgNO_3), an ethylene inhibitor is also used to see the influence on SQTs emission. The emitted SQTs from treated cells cultures were extracted by SBSE (Stir Bar Sorptive Extraction) followed by determination of compound by GC-MS. The result revealed that compared to control treatment, generally ethylene precursor ethephon stimulate the production of sesquiterpenes, while AgNO_3 reduce slightly of the released. Moreover, the result showed the combination application of ethephon and AgNO_3 completely inhibit the production of sesquiterpenes. Agarwood high impact SQTs, jinkohol was emitted from ethephon treated culture which is not detected in control treatment. The majority of SQTs detected from *A. filaria* cells culture were α -guaiene, δ -guaiene and α -humulene.

Key word: agarwood scent, cells suspension culture, ethylene, ethylene inhibitor.
