Enhancement of chemical constituents in hydrosol and residual water of Aquilaria malaccensis tetraploid

ABSTRACT

Polyploidisation is an important feature of species evolution in plant, animal and fungal kingdoms. Many researches proved polyploid organisms outperform their diploid relatives in several aspects. Thus, many plant breeders in the last century practised induced and/or used natural polyploids to obtain improved plant cultivars. Fresh samples of A. malaccensis tetraploid contain higher amount of important agarwood sesquiterpenes compared with diploid counterparts. In this study, an investigation on the presence of important agarwood sesuiterpenes in hydrosol and residual water in diploid and tetraploid A. malaccensis was carried out. Three controls were used, namely, diploid seedlings grown in soil, diploid seedlings grown under control conditions (in vitro) and tissue culture-derived shoots of diploid for comparison with tetraploid A. malaccensis. Results showed that hydrosol water from tetraploid leaf and root samples contained the highest amount of important agarwood sesquiterpenes, i.e. 30.92 and 36.83% respectively. In residual water, the tetraploid A. malaccensis contained the highest amount of important agarwood sesquiterpenes in root sample (49.1%). This article showed that polyploidy can be used as a tool to enhance the presence of important agarwood sesquiterpenes in A. malaccensis.

Keyword: Agarwood; Sesquiterpenes; Diploid; Polyploids; Compounds