Tissue Cultures and Acteoside Production of Osmanthus fragrans

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Kazutaka Nishikawa, Etsuko Matsuura and Kanji Ishimaru

Faculty of Agriculture, Saga University

Abstract

Shoot and callus cultures of Osmanthus fragrans Lour. var. Thunbergii Makino (Oleaceae) were established for the first time. The production of acteoside, which is one of the strongest anti-oxidant principles in natural resource, in these cultures were determined. In addition, acteoside content in in vivo plants of three Osmanthus plants (O. fragrance Lour. var. aurantiacus Makino, O. fragrans Lour. var. Thunbergii Makino and O. x fortunei Carr.) was also analyzed by HPLC.

Field-grown (in vivo) Osmanthus plants contained large amount of acteoside, particularly in stem portion (maximum: 4.72 % dw, in O. fragrans Lour. var. Thunbergii Makino). On the contrary, young (about 1-year old) plants in vivo and shoot cultures of the plant contained small amount of acteoside (the content was below 1 % dw). This result suggested that plant aging is an important factor for the biosynthesis and accumulation of acteoside in this species.

Calli of O. fragrans Lour. var. Thunbergii Makino, cultured on BF solid medium supplemented with 3.0 mg / l IAA and 0.1 mg / l BA in the light or dark condition, produced ca. 1 % (dw) content of acteoside as the major phenolic constituent. Callus cultures of this species could be expected to become a new valuable resource for the supply of anti-oxidant principle, acteoside.

Corresponding author: Kazutaka Nishikawa, Faculty of Agriculture, Saga University, Honjo 1, Saga city, Saga 840-8502, Japan