

International Conference and Exhibition on

Marine Drugs and Natural Products

July 25-27, 2016 Melbourne, Australia

Induction of adventitious root and callus from different genotypes and explant sources for coumestrol production from soybean

Young-Eun Kim¹, Kyung-Ju Lee¹, Eun-Jeong Lee², Kee-Yoep Paek¹ and So-Young Park¹¹Chungbuk National University, Republic of Korea²Amorepacific Corporation, Republic of Korea

Coumestrol is a phytoestrogen found in leguminous plants, and has anti-oxidative effects and protective effects against skin photoaging and hormone-dependent cancers. Coumestrol production by field cultivation of soybean is highly influenced by genetic and environment factors. Recently, adventitious root and callus culture can be an alternative method to produce coumestrol for industrial. In this study, we identified optimal conditions for adventitious root and callus induction from soybean, and compared the efficiency of adventitious root and callus induction among different genotypes and explants. Cotyledon, hypocotyl, and root explants belonging to 3 seedling lines (#25, 63 and 100) of soybean were cultured on MS medium supplemented with various concentrations of IBA, NAA, 2, 4-D and BA. The highest number (1.9 ea/explant) of adventitious roots was obtained using MS medium supplemented with 1.0 mg L⁻¹ IBA; hypocotyls and roots showed the best explants for induction of adventitious roots. The highest induction (71%) of calli was obtained using MS medium supplemented with 1.0 mg L⁻¹ 2,4-D and cotyledons were found to be the best explants for induction of calli. Genotype #63 is the best line for induction of adventitious roots and calli. Adventitious roots derived from 3 explants of 3 genotypes were then mass proliferated in a 3–10-L airlift bioreactor for scale-up culture and coumestrol content will be analyzed using HPLC to determine the relationship between genotype and coumestrol biosynthesis. The results of this study could be used for large-scale production of biomass and coumestrol from soybean for use in the pharmaceutical and cosmetic industries.

Biography

Young-Eun Kim is currently a student in the first grade of the MS course in the Horticulture Science department of the Animal, Horticulture and Food Sciences division of Chungbuk National University, Republic of Korea.

youngeun92@chungbuk.ac.kr

Notes: