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***In vitro* Production of Dioscin from Adventitious Root Cultures of *Dioscorea nipponica* Makino**

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Objectives

In this study, we tried to produce dioscin from adventitious root culture of wild yam, *Dioscorea nipponica* Makino, which has about 2.7% (w/w) of dioscin in the root bark, and established an adventitious roots formation protocol for mass production of dioscin.

Materials and Methods

1. Material

Plant – Seed and seedling of wild collected *Dioscorea nipponica* Makino

2. Methods: Adventitious roots were obtained from roots of seedling and callus. Liquid culture was conducted in MS medium supplemented with NAA 1.0 mg/L and sucrose. Dioscin high production lines were selected by quantitative analysis of dioscin in various root strains

Results and Discussion

Dioscin, a steroidal saponin having various bioactivities such as anticancer, anti-fungal, and antiviral, and anti-obesity activity, is produced in roots of wild yam, not detected in stem, leaf, or callus. An adventitious roots formation protocol from the seeds of *Dioscorea nipponica* Makino was established for mass production of dioscin and related saponins. Removal of testa was essential, and rooting is favorable to MS medium containing 30 g/l of sucrose supplemented with 2 mg/l of 2,4-D. The induction of adventitious roots from root explants was most favorable to medium supplemented with 2 mg/L BA. Among the 20 different adventitious roots formed from different seeds, strain No. 10 was selected based on production ability of dioscin, and its stability through the successive suspension culture. The doubling time of biomass and contents of dioscin, prosapogenin A and prosapogenin C of No.10 adventitious root culture at 5 weeks showed 5.85 day, 3.01 %, 3.19 %, and 1.01 % of dry root, respectively. Our results provide that suspension culture of adventitious roots of *D. nipponica* Makino have a potential for mass production of dioscin.