Title: Callus tissue induction for extraction of a cycloalkane derivative from Apium graveolens

Authors: Seyed Mehdi Razavi and Hadigheh Hejabi

Abstract:

Introduction: Nowadays, isolation of useful natural products from plant callus culture has been used as a modern biotechnological technique to obtain those useful chemicals. *Apium graveolens* (Apiaceae) is a well known edible herb was known to produce a variety of plant secondary metabolites such as flavonoids and coumarins. In this study, we focused on induction of callus tissue of the plant seedling that may be used as a source of different metabolites.

Method: The seeds of the plants after sterilizing were cultured in a petri dishes line with MS medium. After emergence of seedling, radicle segments were transferred to another MS cultures with contain different combination of plant hormones, *kin* and *2,4-D*. The petri dished incubated in a growth chamber at 25°C and certain photoperiod Weight of produced callus were measured for all treatments. On the other hand, n-hexan extract of dried callus was obtained by a soxhelet apparatus and were analyzed using thin layer chromatography technique (TLC) to afford a colorless oily substance. The structure of isolated compound was elucidated by spectroscopic methods such as IR, UV, Mass and H NMR.

Results: Our results indicated that although callus induction take place in MS medium without phyto hormones, maximum callus production induced at MS medium with 2, 4-D (4 mg/L) and kinetin (2mg/L). The structure of isolated natural product from the callus was determined as cyclodecane.

Conclusions: It was be concluded that callus tissue of *Apium graveolens* can be source for production of cyclodecane.