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# Production of some volatile components in *Daucus carota* L. callus cultures

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**Background and Aims:** Daucus carota L. or carrot from Apiaceae family is a herbaceous and biennial plant that produces an edible root. The aromatic substances and beta-carotene, as an orange and abundant pigment of the fruits and roots are the main components of the plant. Callus cultures of D. carota fruits may produce the similar compounds. The aim of this work was to initiate and establishment of callus culture of D. carota fruits for volatiles and beta-carotene production as well as determination of the essential oil of D. carota fruits for comparing.
**Methods:** A sterile in vitro D. carota fruit was prepared by sterilization with ethanol 70% and hydrogen proxide 30% and subculture of buds, excised aseptically and inoculated into sterile culture jars containing Murashige and Skoog's medium and were incubated at 25 °C. Production of calluses main compounds was evaluated by TLC and GC-MS techniques. The same processes were done on D. carota fruits as well. For this purpose the fruits of D. carota were powdered and the volatile fraction was isolated by both of BP hydrodistillation method and dichloromethane solvent. The collected oils were analyzed by GC-MS analysis.
**Results:** No beta-carotene was detected on cultures and six compounds were found in the essential oil of D. carota fruits including apiol (44.6%). Apiol and myristicin were detected in DCM extract of cultures.
**Conclusions:** According to our results the cell cultures of D. carota fruits like as intact plant are able to produce secondary metabolites but it looks different in number of compounds.

**Keywords:** Daucus carota; Apiaceae; Callus culture; Essential oil; GC-MS; Apiol