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PRODUCTION OF FLAVOURING PRINCIPLES BY TISSUE CULTURE OF *CORIANDRUM SATIVUM*

THE methodology employed to establish *in vitro* plant tissue cultures has been well documented.[1] Many investigators have since speculated on the possible application of plant tissue cultures for producing economically useful plant constituents. Some medicinal compounds have been reported to be produced by static or suspension cultures of plant tissues. Thus, production of cardic glucosides by tissue cultures of *Digitalis lanata* and *Digitalis purpurea*,[2] nicotine from *Nicotiana tabacum* L.,[3] tropane alkaloids from *Datura* sp.[4] and vinca alkaloids from *Catharanthus roseus* L.[5] have been recently reported. The seeds and leaves of the *Coriandrum sativum* plant are most extensively used throughout India to flavour various dietary preparations. Our interest, in the establishment of the tissue culture of *Coriandrum sativum*, was to see if the flavouring principles present in the natural plant are also synthesized by the callus tissues.

Seeds of *Coriandrum sativum* were sterilized with 5% sodium hypochlorite solution, washed with sterile distilled water and germinated under aseptic conditions. Roots germinated under sterile conditions were used for callus growth. White's medium,[6] containing 0·7% agar and supplemented with 15% coconut water (V/V), 4 mg./lit. of 2, 4-dichlorophenoxyacetic acid (2, 4 D) and 4 mg./lit. of indole acetic acid (IAA), was the most satisfactory medium for callus tissue growth. A healthy callus tissue with a maximum weight of 465 mg. was obtained in 8 weeks, which was started with an initial weight of 25 mg. on the above medium. White's medium without any supplementation could not, however, support the growth.

Seven to eight-week old callus tissues were collected from several flasks. Ten grams of the callus tissue was extracted with 50 ml. of ether in cold and the ether extract was concentrated in vacuum. The concentrated callus extract was then spotted on TLC plates using silica gel G. and 5% ethyl acetate in benzene as developing solvent. Pure samples of linalool, borneol, geraniol, α- and β-pinene and *p*-cymene were also spotted as standards. These compounds are associated with the flavouring principles of coriander oil.[7] The developed plates were sprayed with 10% solution of antimony pentachloride in carbon tetrachloride and were warmed at 100° for a few minutes. The callus extract showed the presence of geraniol, with R_f value matching exactly with that of the standard geraniol sample spot. None other flavouring principles could be detected in the callus extract. The ability of coriander root callus to biosynthesize geraniol could thus be established. Mention could be made that volatile flavouring compounds associated with lemon,[8] peaches,[9] and mints[10] were not reported present in their respective static plant tissue cultures.

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CATION EXCHANGE CAPACITY OF BASALTIC SOILS OF MALWA PLATEAU

CATION Exchange Capacity (C.E.C.) is one of the properties used in the characterisation of soils. This property is usually associated with the mineral and organic colloidal constituents ($< 2\mu$) of the soils. Hosking[1] arrived at an average value of 280 m.e. per 100 g. of organic carbon in soils.