In vitro Morphogenesis of Crambe maritima L.

Brief Report

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With 14 Figures

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Summary

Tissue cultures isolated from the root of Crambe maritima have now undergone 17 transfers over two years on a medium containing 10% coconut milk, 2.0 mg/l IAA + 0.8 mg/l kinetin. The cultures consist predominantly of organized structures varying in complexity from nodular to root-like outgrowths and teratomatous leafy shoots. Embryoid-like structures also occur.

The fleshy roots of many angiosperms have considerable regenerative capacity (Petersen 1975, Priestly and Swingle 1929), and Bowes (1970) established tissue cultures from the root of Taraxacum officinale to compare morphogenesis in vitro (Bowes 1971 and 1975 a) with regeneration direct from the root (Bowes 1975 b and in the press).

The excised root of Crambe maritima shows polar organogenesis (Fig. 1 and Neilson Jones 1925) and a detailed cyto-histological investigation of this phenomenon, together with a parallel study of in vitro development, is now in progress. The establishment of tissue cultures of C. maritima and a preliminary account of their morphology, is reported in the present note.

Roots of Crambe maritima L. (Stock 2) were obtained from The National Vegetable Research Station, Wellesbourne, England. Cylindrical explants (containing both phloem and xylem) were excised with a cork borer, sterilised in 0.1% mercuric chloride for 20–30 minutes and washed in 3 changes of sterile distilled water. The explants were incubated under sterile conditions at ca. 25 °C and in low intensity light, in 100 ml Erlenmeyer flasks containing: inorganic salts as in Table 6 A and organics as in Table 6 B of Murashige and Skoog (1962) with 2.0 mg/l IAA and 0.8 mg/l kinetin but the omission of edemin. Additionally 0.1 mg/l aneurine hydrochloride and 10% coconut milk were added to the medium.
Fig. 1. Adventitious buds arising at proximal surface of excised root segment ×6. Figs. 2–8. All from *in vitro* grown material. Fig. 2. Leafy culture with roots, arrows ×1.5. Fig. 3. Nodular and other outgrowths from culture surface ×4.5. Fig. 4. Embryoid-like structure with presumptive (arrows) cotyledons ×12. Fig. 5. As for Fig. 4 ×9.5. Fig. 6. Embryoid-like structure with single, lobed presumptive cotyledon and callusing on hypocotyl ×7. Fig. 7. Pair of embryoid-like structures fused longitudinally ×6. Fig. 8. Embryoid-like structure with a pair of lobed cotyledons ×6. Fig. 9. Possibly derived from embryoid-like structure, arrows show lamina and asterisk indicates mat of hairs on root-like organ ×7