

Thesis Title *In vitro* Propagation of *Curcuma aurantiaca* van Zijp No. A033

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Abstract

Young inflorescence explants from *Curcuma aurantiaca* van Zijp No. A033 grown onto MS(1962) agar medium supplemented with kinetin at 0.25, 0.5 and 1.0 mg/l showed that the explants from the top and the middle parts from young inflorescence 1.5 cm in length could be induced to form shootlets in 92.5 ± 31.8 - 138.0 ± 0 days after culturing, having average shootlet 0.7 ± 1.2 - 1.7 ± 1.5 .

The second adventitious buds from the base of the 20 cm high young shoots grown *in vitro* onto an agar medium supplemented with 3.0 mg/l BAP showed that 100% of the culture explants induced shootlets at 52.0 ± 10.0 days after culturing, having average shootlets at 2.2 ± 0.8 per explant.

Multiplication could be done at every 4 week intervals by longitudinally cutting into two halves at 0.3-1.0 cm high and grown in a liquid medium supplemented with 3.0 mg/l BAP on a shaker. The optimum medium volume was 1.0 - 2.0 ml/explant yielding 1.3 ± 0.2 - 1.9 ± 0.2 shootlets/explant.

Adding coconut water at 10 and 20 % (v/v) shown no significant effect on shootlet formation but decreased average shootlet number and height. Adding NH_4NO_3 at 1.5 and 2X increased shootlet height. It showed no significant effect on shootlet and root growth when the cultured plantlets were grown in normal conditions and the CO_2 enriched conditions at 3,000 ppm. Histological study on the leaves obtained from CO_2 enriched conditions had more mesophyll layers and the green leaves were darker than those obtained from the normal one.