

UNIVERSITI TEKNOLOGI MARA

**EMBRYOGENIC CALLUS
INDUCTION OF MALAYSIAN RICE
(*Oryza sativa* L.) VARIETIES
MR 253 AND MR 297**

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ABSTRACT

MR 253 and MR 297 are local Malaysian *Oryza sativa* L. varieties, were examined for callus induction responses from seed and *in vitro* plantlets using root part as explants. These varieties were chosen because studies on local Malaysian rice varieties have less findings in terms of plant tissue culture. The explants were treated in MS media with several hormone treatments which added with 2,4-D using 1.0 mg/L, 2.0 mg/L and 3.0 mg/L for both varieties. Callus growth from the seeds and roots became visible after 4 weeks cultured on MS medium supplemented with 2,4-D. Both varieties showed a consistent growth of callus performance. Best treatment was 3.0 mg/L 2,4-D and the average of callus induction frequency were 83.3% and 91.7% for both MR 253 and MR 297 respectively. Then, the best treatment of 3.0 mg/L 2,4-D was proceeded with elicitor addition using casein hydrolysate (1.0, 2.0, 3.0, 4.0 and 5.0 mg/L). Seed was chosen as the best explant to proceed with elicitation treatment. The best treatment with elicitor was 3.0 mg/L 2,4-D + 2.0 mg/L CH and the average of callus induction frequency for MR 253 and MR 297 was 30.0% and 45.0% respectively. Based on the results obtained, comparison of callus growth performance was made between both rice varieties. MR 297 was better than MR 253 because of the callus growth performance consistency. In this experiment, embryogenic callus was obtained in both callus growth by seed and root. First stage of embryogenic callus, globular stage was able to observe by close up microscopic pictures in callus obtained. Thus, it shows the effectiveness and efficiency of using local Malaysian rice varieties in obtaining embryogenic callus. Further experiment may focus more on plant regeneration or callus extraction for secondary metabolites identification.

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