UNIVERSITI TEKNOLOGI MARA

THE EFFECT OF ACTIVATED CHARCOAL ON IN VITRO GROWTH AND DEVELOPMENT OF RICE (*Oryza sativa* L.) MATURE SEED

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CANDIDATE’S DECLARATION

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ABSTRACT

Rice (*Oryza sativa* L.) is a monocot plant, one of the world’s most important cereals crop and a staple food. More than half of world’s population eat rice as a important staple food and mostly from developing countries. The increasing demand of rice cause by global population lead researcher to find suitable method to cultivate rice than traditional breeding. As a result, biotechnology effort has become significant. In order to improve the paddy quality and increase rice production, the biotechnology is use as a micropropagation method. However there is problem to avoid abnormality of growth and development of explant. Thus, the aim of the experiment for this research project is to determine the effect of activated charcoal on *in vitro* growth and development of rice mature seeds. It is important to study the influence and the most effective concentration of activated charcoal that support growth and development of rice mature seeds by *in vitro*. It can help researcher and producer to regenerate healthy plantlets and thus reduce a cost of production. Dehusked mature seeds were cultured in MS media supplemented with different concentration of activated charcoal (0.0, 0.5, 0.75, 1.0 and 2.0 g/L) combination with constant concentration of BAP and NAA. A Complete Randomized Design (CRD) with 5 replications was used in this study. As a result, the higher concentration of activated charcoal (2.0 g/L) is required for development of healthy plantlet from the mature seed. The successful regeneration of full-fledge plant achieved in this study can be used as new *in vitro* protocol for rice (*Oryza sativa* L.) production industry and useful for plant breeders for improving rice cultivars.
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