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THE EFFECTS OF ORGANIC MATERIALS ON GROWTH AND PRODUCTION OF SELECTED SECONDARY METABOLITES OF *BOESENBERGIA ROTUNDA* (L.) Mansf.

AZREEN SUHANA BINTI ZELNOR

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ABSTRACT

Boesenbergia rotunda (L.) Mansf. is a highly important medicinal plant under Zingerberaceae family commonly known as temu kunci and widely found in Asian countries where it is commonly used as food ingredient and ethnomedicine. The rhizome and fingerroot of this species contain several bioactive compounds with pharmaceutical properties. This plant requires optimum environment especially nutrient to increase the production and improve the quality of this plant. Intensive use of chemical fertilizer in agriculture affected people health and environment. Organic material has been widely used in agriculture development to improve the soil quality, crop yield, plant growth performance, and to reduce the dependencies on chemical fertilizer. This study was conducted to identify the effects of organic materials on plant growth and production of selected secondary metabolites of this species. This study conducted at glass house Rimba Ilmu, Universiti Malaya using completely randomized design (CRD) which involve seven treatment and four replications include control, chemical fertilizer, biochar, vermicompost, food waste compost, empty fruit bunch compost and lignohumate in 5 kg of soil. The effects of this treatments based on the plant growth, number leaves, fresh and dry weight of rhizome and fingerroots, also production of alpenetin, pinocembrin, cardamonin, pinostrobin and panduratin A in rhizome. In this study, vermicompost gave the significant increases and highest reading of plant height (52.71 cm), number of leaves (8), rhizome and fingerroots fresh weight (210.00 g), dry weight of rhizome and fingerroot (16.53 g) and pinostrobin production (949.9725 mg/g) compared to others treatments. Biochar shows significant highest of cardamonin (195.5725 mg/g) and pinocembrin (615.6225 mg/g) accumulation. Lignohumate shows significant highest of panduratin A (222.6900 mg/g) and alpenetin production (452.6475 mg/g). The treatment used organic materials shows the best effects in all parameter measured. In conclusion, organic materials can give the positive effects on growth and selected secondary metabolites of *B.rotunda* and at the same time can reduce the dependencies on chemical fertilizer.

Keywords: organic material, fertilizer, growth performance, vermicompost, food waste compost, biochar, and lignohumate.

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