

Interaction of Coconut Water and Sucrose Concentrations on the Growth and Production of Granola Potato Microtuber Seeds (Solanum Tuberosum L.) Through In Vitro Culture

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ABSTRACT

Potato (Solanum tuberosum L.) is one of the most widely consumed vegetable crops in Indonesia. The increasing demand for potatoes is driven by population growth and the expansion of industries that utilize potatoes as a raw material. A major challenge in the field is the continued use of tubers from previous harvests, which leads to a decline in seed quality and the emergence of tuber-borne diseases that are difficult to control. Tissue culture propagation offers a viable alternative to overcome these issues. This study aimed to evaluate the effect of coconut water and sucrose concentrations on the formation of microtubers in Granola potato plants. The research was conducted from November 2024 to March 2025 at the Tissue Culture Laboratory of the State Polytechnic of Jember, employing a factorial Completely Randomized Design (CRD). The experimental treatments consisted of two factors, each with three levels: coconut water concentrations (15%, 20%, and 25%) and sucrose concentrations (70 g/L, 80 g/L, and 90 g/L), with three replications. The results revealed that the combination of coconut water and sucrose had a highly significant effect on microtuber formation in Granola potato plants. The best results for the number of shoots and nodes were obtained from the interaction of 20% coconut water and 90 g/L sucrose. The highest number of microtubers was observed in the treatment combination of 15% coconut water and 90 g/L sucrose. Additionally, the largest stem diameter was recorded in the interaction between 25% coconut water and 80 g/L sucrose.

Key Words: *Potatoes, Coconut Water, Sugar*