Effect of The Application of ZPT IAA (Indole Acetic Acid) and Kinetin on Multiplication of Granola Potato Shoots (Solanum Tuberosum L.) In Vitro

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ABSTRACT

Seedlings produced from tissue culture with an inappropriate ratio of growth regulators tend to have low quality and uneven growth. The success of granola potato shoot multiplication can be increased by regulating the ratio of growth regulators, especially auxin and cytokinin. The purpose of this study was to examine the best concentration of IAA and kinetin for granola potato shoot multiplication. This study was conducted from June to October 2024, at the Tissue Culture Laboratory, Jember State Polytechnic. The study was designed using RALF consisting of two factors and three replications. The first factor was the concentration of IAA consisting of 0.4 mg l^{-1}; 0.7 mg l^{-1}; and 1.0 mg l^{-1}, while the second factor was the concentration of kinetin consisting of 0.5 mg l^{-1}; 1.0 mg l^{-1}; and 1.5 mg l^{-1}. The results showed that there was an interaction between the combination treatment of 0.4 mg l^{-1} IAA and 0.5 mg l^{-1} kinetin on the time of callus emergence (6.33 days). This is because the balance of auxin and cytokinin hormones can accelerate callus growth. Combination treatment of 0.7 mg l^{-1} IAA + 1.0 mg l^{-1} kinetin on the time of shoot emergence (5.67 days). Shoots can grow faster because IAA stimulates cell elongation, while kinetin stimulates cell division. In the treatment of IAA 1.0 mg l^{-1}, there was a very significant difference in the number of segments (24.89 pieces) and the number of roots (29.22 pieces). While the treatment of IAA 0.7 mg l^{-1} had a significant difference in root length (5.91 cm). In this case, IAA plays a role in stimulating cell elongation and increasing cell wall plasticity, allowing cells to enlarge and lengthen.

Keywords: *Granola Potato, Tissue Culture, Plant Growth Regulators*