"THE EFFECT OF AUXIN AND CYTOKININ APPLICATION ON THE GROWTH OF ARABICA COFFEE (COFFEA ARABICA L.) CALLUS UNDER IN VITRO CONDITIONS".

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ABSTRACT

Arabica coffee (Coffea arabica L.) is a plantation commodity known for its superior cup quality and high economic value in the international market. The increasing demand for high-quality planting materials has encouraged the development of tissue culture as a propagation method capable of producing large numbers of uniform seedlings. This study aimed to evaluate the effects of plant growth regulator (PGR) combinations, coffee varieties, and their interaction on the in vitro growth of Arabica coffee callus. The experiment was conducted at the Plant Tissue Culture Laboratory of Politeknik Negeri Jember from July to December 2024 using three-month-old primary callus as the planting material. A factorial Completely Randomized Design (CRD) was employed with two factors: PGR combinations (0 ppm 2,4-D + 6 ppm BAP and 0.22 ppm 2,4-D + 6 ppm BAP) and four Arabica coffee varieties (Gayo, Orange Bourbon, S-795, and Andungsari). The results showed that the PGR combinations significantly affected the percentage of new callus formation and new callus weight, and highly significantly affected the time required for new callus emergence. However, they had no significant effect on callus color, callus type, or the time required to reach the globular stage. The coffee varieties had a highly significant effect on the time of new callus emergence, percentage of new callus formation, callus type, and new callus weight, whereas the interaction between PGR combinations and varieties significantly affected only new callus weight. The combination of 0.22 ppm 2,4-D + 6 ppm BAP applied to the Gayo variety produced the best callus growth response among all treatments.

Keyword : *Arabica Coffee, Auxin, Callus, Cytokinin, Embryonic*