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## **EFFECT OF SELECTED PLANT GROWTH REGULATORS ON *In vitro* SHOOT MULTIPLICATION OF LOCAL HYBRID PAPAYA (*Carica papaya* L.) VARIETY 'HORANA PAPAYA HYBRID 01'**

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### **ABSTRACT**

Papaya (*Carica papaya* L.) is a renowned tropical fruit crop with high nutritional and medicinal value. Conventional seed propagation causes variability in papaya due to inherent heterozygosity and dioecious nature. Thus, imported hybrid (F1) seeds which offer heterosis, higher yield and many other favorable agronomic traits are preferred. However, maintaining pure parental inbred lines for hybrid seed production involves time, space and labor. Nevertheless, F1 traits are unstable beyond first generation. Thus, micropropagation is a promising alternative to get true-to type plants from F1 seedlings of papaya. Horana Papaya Hybrid 01 is the first local papaya hybrid developed in Sri Lanka. The present study evaluates the effect of 6-Benzylaminopurine (BAP) and 1-Naphthalene Acetic Acid (NAA) on *in vitro* multiplication of its shoot tip explants. Lateral and apical shoots excised from six week old greenhouse raised seedlings were surface sterilized with 20% Sodium Hypochlorite (Clorox<sup>®</sup>) for 20 min and established in twelve treatments of Murashige and Scoog (MS) basal medium carrying different concentrations of BAP (0.0,0.5,1.0,1.5 mgL<sup>-1</sup>) in combination with NAA (0.0,0.1,0.5 mgL<sup>-1</sup>). The number of shoots produced per explant, presence/absence of calli and the nature of shoots produced were monitored over a 60 day incubation period while transferring into fresh media on fourth and seventh week respectively. The ANOVA results indicated that BAP has a significant effect ( $p < 0.05$ ) on shoot multiplication. However, interactions between BAP and NAA were not significant. Among the tested twelve treatments, 1.0 mgL<sup>-1</sup> BAP was the best treatment for direct organogenesis. Mean number of shoots per explant was low when used NAA only. *In vitro* rooting occurred in the treatment supplemented with 0.1 mgL<sup>-1</sup>NAA. The medium supplemented with BAP and NAA at a concentration of 0.5 mgL<sup>-1</sup> each, gave rise to the greatest callusing frequency. Higher BAP levels (1.0 and 1.5 mgL<sup>-1</sup>) along with 0.5 mgL<sup>-1</sup> NAA gave bushy, compact shoot clusters that require an elongation phase. Findings of the present study can be incorporated to develop a suitable *in vitro* micropropagation protocol that would facilitate commercial propagation of this papaya variety.

**Keywords:** Micropropagation, Horana Papaya Hybrid 01, BAP, NAA, Direct organogenesis