INDUCTION OF CALLOGENESIS FROM ANTHER-DERIVED FAST GROWING CALLI IN COCONUT *(Cocos nucifera* L.)

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Cocos nucifera, one of the most important plantation crops has a diploid chromosome complement of 2n=32. Dihaploid coconut plants are produced through anther culture. Non-embryogenic fast growing calli (FGC) are resulted at a low frequency in the cultured anthers. Present study was undertaken to induce embryogenic calli from these FGC. They were subjected to heat pretreatment at 38 °C for 6 days. Three media (Modified Eeuwans, CRI 72 and MS) and their physical status (liquid, solid and nurse culture) were tested for the induction of callogenesis. Modified Eeuwens Y3 medium supplemented with three concentration levels (0, 10, 100 µM) of NAA, 2iP and kinetin in combination with the similar concentration levels of 2,4-D were studied. Different sucrose levels (4, 6, 9 and 12%) were also tested. Histological study and SSR marker analysis were conducted to analyze the resulted FGC-derived structures. Modified Eeuwans Y3 medium solidified with 0.3% phytagel was the best treatment to induce callogenesis and to increase the weight of the FGC. Among the different combinations of growth regulators tested, Modified Eeuwans Y3 medium supplemented with 100 µM 2,4-D is the best for weight increase and a significant impact of NAA, 2iP and kinetin was not observed. A negative correlation was resulted in the level of sucrose in the culture medium and the weight increase in FGC. The medium supplemented with 4% sucrose gave the highest weight gain (18.08 g^{-1}). Irrespective to the culture medium composition some embryogenic calli were produced from FGC. Histological studies revealed that they consisted of the cambium like zone, a characteristic feature of the embryogenic calli. SSR marker analysis revealed that the anther derived FGC was originated from the diploid somatic cells. Therefore, FGC could be a good source of explant for clonal propagation of coconut.

Key words: Callogenesis, Coconut, Fast growing calli, Growth regulators, Histology, SSR marker