Histological analysis of in vitro cultured coconut endosperm

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Abstrak

Coconut is a very important plant for the livelihood of people in tropical countries. It is also used as an icon of tropical region.Â Coconut fruit is very heavy and can cause injuries if the fruit falls down and hits somebody who happens to be underneath a coconut tree. In order to avoid the accident, Â the coconut fruits have to be regularly cut off. Coconut tree originated from in vitro cultured endosperm is a triploid plant that produces seedless fruit (without endocarp). Coconut fruit without endocarp is not heavy.Â The objective of this study was to investigate plant regeneration of fresh and in vitro cultured coconut endosperms. The fresh and developed in vitro cultured coconut endosperms were observed using histological analysis. Solid endosperm of seven month-old postanthesis coconut from â€œSamoan Dwarfâ€ cultivar was freshly picked up and cultured in vitro on modified Branton & Blake formula. Histological study of fresh coconut endosperm showed that the endosperm consisted of parenchyma cells, which were relatively uniform in shape and size, with some nuclei consisted of 1 â€“ 5 nucleoli. Three month-old calli of in vitro grown coconut endosperm in semi solid media showed that its cells varied in shape and size, characterized by high nucleus to cytoplasm ratio, high starch, protein and lipid contents which underwent many divisions.Â Seven month-old calli of in vitro grown coconut endosperm in liquid media showed embryogenic cells which resembled proembryos. Fourteen month-old bud-like structure of coconut endosperm in semi solid media showed a meristematic layer, tunica-corpus structure, cortex-like region and tracheids of xylem. These results indicated that the bud-like structure was an early stage of shoot bud formation in coconut endosperm. This is the first report of early stage of shoot bud formation occurring on coconut endosperm cultured in vitro.