

## Exploring Explant Sources for Callus Induction of the Nipa Palm

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- MS medium
- nipa palm (*Nypa fruticans*)

### Abstract

Nipa palm (*Nypa fruticans*) is an unexplored renewable alcohol resource that does not compete with agricultural production as it may be cultivated in estuarine and coastal areas. This sturdy palm produces a higher alcohol yield even without fertilizer input compared to other ethanol sources such as sugar cane or cassava. At present, nipa is allowed to naturally propagate itself, which leads to non-uniform plants with different volumes of alcohol produced annually. The study explored tissue culture for nipa palm using various explants as a benchmark study on the possibility of producing uniform high-yielding plants with superior breeding traits compared with propagules found in situ. Callus induction was attempted on mature zygotic embryos, plumules, immature leaf, and ovary explants. Contrary to various studies suggesting that monocots are recalcitrant to tissue culture methods, successful callus induction was observed on immature leaf explants, mature zygotic embryos, and plumule explants under Euwens or MS culture medium supplemented with various concentrations of 2,4-D synthetic plant hormone. Furthermore, callus formation was observed at higher 2,4-D concentrations than with 60  $\mu\text{m}$  concentration.