

In vitro Culture of *Gymnopodium floribundum* (Dzidzilché) as an Alternative for Conservation and Sustainable Use

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Gymnopodium floribundum (Dzidzilché) is a tree species of strategic importance for apiculture in the Yucatán Peninsula, a region that produces 35% of Mexico's national honey output. Despite its high economic and ecological value, its populations face critical threats from deforestation and dichogamy, a biological phenomenon that results in almost null germination under natural conditions. In the absence of prior biotechnological protocols, this study developed an initial in vitro induction phase to ensure its conservation and sustainable use. The study, conducted at CBTA No. 13, used an experimental design with seeds collected from Tahmek and classified according to their degree of maturity. A stepwise disinfection protocol was applied using colloidal silver (2%), chloramphenicol (1%), and sodium hypochlorite (20% and 30%), achieving 100% contamination-free material. Sowing was carried out in Murashige and Skoog (MS) medium without growth regulators, under controlled temperature and photoperiod conditions. Results showed an 8.3% germination rate in just five days, significantly outperforming field conditions. It was determined that the physiological maturity of the seed directly influences germination response, enabling optimization in the selection of plant material. This work establishes the first scientific evidence of the feasibility of controlled germination in this species, providing a methodological foundation for mass propagation and ecological restoration. By overcoming natural reproductive barriers, the project aligns with the Sustainable Development Goals (SDGs) 12, 13, and 15, strengthening biodiversity and the rural apicultural economy.

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