

Empirical Measures to Enhance Germination Potential and Control Browning of Tissue Cultures of *Andrographis paniculata*

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Abstract : *Andrographis paniculata*, (Burm f.) Wallich ex. Nees (Family Acanthaceae) popularly known as King of Bitters, is an important medicinal herb. It has an astonishingly wide range of medicinal properties such as anti-inflammatory, antidiarrhoeal, antiviral, antimalarial, hepatoprotective, cardiovascular, anticancer, and immunostimulatory activities. It is widely cultivated in southern Asia. Though propagation of this herb generally occurs through seeds, it has many germination problems which intrigued scientists to work out on the alternative techniques for its mass production. The potential of tissue culture techniques as an alternative tool for AP multiplication was found to be promising. However, the high mortality rate of explants caused by phenolic browning of explants is one of the difficulties reported. Low multiplication rates were reported in the proliferation phase, as well as cultures decline characterized by leaf fall and loss of overall vigor. In view of above problems, a study was undertaken to overcome seed dormancy to improve germination potential and to investigate further on the possible means for successful proliferation of cultures via preventive approaches to overcome failures caused by phenolic browning. Experiments were conducted to improve germination potential and among all the chemical and mechanical trials, scarification of seeds with sand paper proved to be the best method to enhance the germination potential (82.44%) within 7 days. Similarly, several pretreatments and media combinations were tried to overcome browning of explants leading to the conclusion that addition of 0.1% citric acid and 0.2% of ascorbic acid in the media followed by rapid sub culturing of explants controlled browning and decline of explants by 67.45%.

Keywords : plant tissue culture, empirical measure, germination, tissue culture

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