

## Factors affecting *in vitro* clonal propagation of *Spilanthes acmella* L. by axillary shoot proliferation

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### Abstract

*Spilanthes acmella* L., a member of the family Asteraceae, is a perennial herb and widely distributed in tropics and subtropics. The genus is a treasure-trove and contains surplus bioactive compounds, which are used to cure toothache, flu, rabies and tuberculosis. The main activity is due to an antiseptic alkaloid, spilanthol that is known to possess antifungal and antimicrobial properties. Since plant grows in marshy places and, consequently, is susceptible to pest and diseases. In order to produce high-grade secondary metabolites, a constant source of disease-free planting material is required. Therefore, the present study was undertaken to develop an efficient and rapid protocol for clonal propagation of *Spilanthes*. Nodal segments bearing two opposite axillary buds were used to initiate cultures. The effects of different factors like, strength of major inorganic nutrients, carbohydrate source and growth regulators, were studied on *in vitro* shoot proliferation. Of the different media types tested, full strength major inorganic nutrient has significantly affected the bud-break. Sucrose at 3% was the preferred carbon source in terms of growth compared to maltose and glucose at equal concentration. The optimal medium adopted includes the full strength of Murashige and Skoog (1962) major inorganic salts (MS), 30g<sup>-1</sup> sucrose and 5.0μM BAP. On MS + 5.0μM BAP, 10 fold shoot multiplication was achieved in, every 5 weeks, by cutting the *in vitro* shoot into single node segments at the end of the multiplication cycle and culturing them onto the fresh parent medium. *In vitro* differentiated shoots were successfully rooted with 100% efficiency on ½ MS medium (major nutrients reduced to half strength) containing 50g<sup>-1</sup> sucrose. Micropropagated plantlets were hardened and successfully established in soil. The significance of such a method is to provide large-scale disease-free planting material and to avoid genetically aberrant plant development by employing pre-existing axillary buds for large-scale propagation.

Keywords: Amphistomes, Anthelmintic, Antioxidant, Asteraceae, Phenolics