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Development of an *in vitro* propagation protocol for *Pycnostachys urticifolia* Hook, a South African medicinal plant

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Overharvesting of medicinal plants for traditional and commercial use is an increasing conservation concern. Micropropagation of these plants is a necessary measure for both conservation and exploitation of therapeutic phytocompounds. This study aimed to develop a novel and efficient micropropagation protocol for *Pycnostachys urticifolia* Hook. It is further aimed to compare the micromorphology and trichome density between micropropagated and field grown leaves. Successful decontamination of axillary buds was achieved using 3% NaClO and 0.1% $HgCl_2$ for 10 minutes each. Explants were placed on MS media containing cytokinins [0.5 ml/l 6-benzylaminopurine (BAP) and 0.5 ml/l 6-furfurylaminopurin (kinetin)] with auxins [0.5 ml/l indole-acetic acid (IAA) and 0.5 ml/l indole-3-butyric acid (IBA)] for bud break and multiplication in 1:1 and 2:1 ratios respectively. Successful bud break was achieved on MS medium containing kinetin and IAA yielding 2.94±0.42 shoots per explants after 2 weeks. Significant shoot proliferation of 2.88±0.33 shoots per explant was achieved after 2 weeks on media containing kinetin (2 mg/l) and IAA (1 mg/l). Shoots were rooted on MS medium supplemented with 2 mg/l IAA resulting in 77% rooting after 3 weeks. Plantlets were subsequently acclimatized for 1 month in a mist tent resulting in 82% survival. Micropropagated leaves presented a greater density of non-glandular and glandular trichomes compared to field grown leaves. Hence, greater quantities of potentially therapeutic compounds can be harvested from micropropagated leaves of *P. urticifolia*. Future work should investigate the differences in the phytochemical profiles of leaf extracts from *in vitro* and field grown plants.

Biography

Jerusha R Naidoo has completed her PhD and a Member of the Research Centre for Plant Growth and Development at the University of KwaZulu-Natal, South Africa in the field of Biological Sciences (Cell Biology). Her PhD focuses on the micromorphology of secretory structures, pharmacognosy and development of an *in vitro* propagation protocol of a South African medicinal plant. This research involves the bioassay-guided isolation and identification of therapeutic phytocompounds and optimization of a micropropagation protocol for mass production of medicinal plant material. Her research expertise includes electron microscopy, phytochemistry, ethnobotany, ethnopharmacology, plant biotechnology and nanotechnology.

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