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## Micropropagation and micro-morphological studies of *Stachys natalensis* Hochst

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*Stachys* is one of the largest genera in the family Lamiaceae with many members being used as ornamentals, edible food sources and as therapeutic agents in traditional medicine. *Stachys natalensis* Hochst is a perennial, straggling shrub found in grassy and woody areas along the east coast of southern Africa. This study was undertaken to describe key micro-morphological features of the foliar structures of *S. natalensis* and establish an *in vitro* micropropagation protocol for the sustained and high-yielding production of this difficult to cultivate species. Furthermore, the foliar micro-morphological fidelity between field and *in vitro* propagated material was compared. Successful decontamination of axillary bud explants involved immersion in 1% and 3% NaClO followed by 0.1% HgCl<sub>2</sub>. Bud break was achieved within 3 weeks on MS media supplemented with benzylaminopurine (BAP) and indole-3-butyric acid (IBA). Shoot multiplication ( $9.1 \pm 3.6$  shoots/explant) was achieved in media containing kinetin and indole-3-acetic acid (IAA) after 12 weeks. The addition of IAA to MS medium allowed for 64% of shoots to produce adventitious roots in 5 weeks after which rooted plants were acclimatized. Acclimatized plantlets ( $92 \pm 4.2\%$ ) did not show any gross morphological abnormalities compared to field-grown plants apart from the presence of visibly longer non-glandular trichomes. Glandular trichomes of acclimatized plants were morphologically similar to their field-grown counterparts. Trichome density of micro-propagated plants decreased with leaf maturity as observed on field-grown plants. With an effective *in vitro* propagation protocol presently established further optimization is required for enhanced plantlet production.

### Biography

Benita Kalicharan is currently pursuing her PhD in Biological Sciences as a Member of the Research Centre for Plant Growth and Development at the University of Kwa-Zulu Natal, South Africa. Her areas of specialization include electron microscopy, plant biotechnology and ethnopharmacology. Her research interests lie in the study of plant secretory structures, micropropagation of threatened species and the bio-guided isolation and characterization of phytochemicals from established and potential medicinal plants.

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