Micropropagation of *Cyclopia genistoides*, an Endemic South African Plant of Economic Importance

Adam Kokotkiewicz\(^a\), Maria Luczkiewicz\(^a*,\) Anna Hering\(^b\), Renata Ochocka\(^b\), Krzysztof Gorynski\(^c\), Adam Bucinski\(^c\), and Pawel Sowinski\(^d\)

\(^a\) The Chair and Department of Pharmacognosy, Faculty of Pharmacy, Medical University of Gdansk, al. gen. J. Hallera 107, 80-416 Gdansk, Poland. Fax: (+48) 58 3493160. E-mail: mlucz@wumed.edu.pl

\(^b\) The Chair and Department of Biology and Pharmaceutical Botany, Faculty of Pharmacy, Medical University of Gdansk, al. gen. J. Hallera 107, 80-416 Gdansk, Poland

\(^c\) Department of Biopharmacy, Faculty of Pharmacy, Ludwik Rydygier Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University in Torun, Curie-Sklodowskiej st. 9, 85-094 Bydgoszcz, Poland

\(^d\) Nuclear Magnetic Resonance Laboratory, Chemical Faculty, Gdansk University of Technology, Narutowicza st. 11/12, 80-233 Gdansk, Poland

\(*\) Author for correspondence and reprint requests

Z. Naturforsch. 67c, 65–76 (2012); received June 9/November 3, 2011

An efficient micropropagation protocol of *Cyclopia genistoides* (L.) Vent., an indigenous South African shrub of economic importance, was established. *In vitro* shoot cultures were obtained from shoot tip fragments of sterile seedlings cultured on solid Schenk and Hildebrandt (SH) medium supplemented with 9.84 µM 6-(3,2-dimethylallylamino)purine (2iP) and 1.0 µM thidiazuron (TDZ). Maximum shoot multiplication rate [(8.2 ± 1.3) microshoots/explant] was observed on this medium composition. Prior to rooting, the multiplied shoots were elongated for 60 days (two 30-days passages) on SH medium with one-half sucrose concentration, supplemented with 4.92 µM indole-3-butyric acid (IBA). The rooting of explants was only possible in the case of the elongated shoots. The highest root induction rate (54.8%) was achieved on solid SH medium with one-half sucrose and one-half potassium nitrate and ammonium nitrate concentration, respectively, supplemented with 28.54 µM indole-3-acetic acid (IAA) and 260.25 µM citric acid. The plantlets were acclimatized for 30 days in the glasshouse, with the use of peat/gravel/perlite substrate (1:1:1). The highest acclimatization rate (80%) was obtained for explants rooted with the use of IAA-supplemented medium. The phytochemical profile of the regenerated plants was similar to that of the reference intact plant material. HPLC analyses showed that *C. genistoides* plantlets obtained by the micropropagation procedure kept the ability to produce xanthones (mangiferin and isomangiferin) and the flavanone hesperidin, characteristic of wild-growing shrubs.

**Key words:** Cytokinins, Auxins, Polyphenols