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ANTIMICROBIAL ACTIVITY, ANTIOXIDANT POTENTIAL AND TOTAL PHENOLIC CONTENT OF TRANSGENIC ATCKX1 CENTAURY (*Centaurium erythraea* Rafn.) PLANTS GROWN IN VITRO

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Abstract

Common centaury, *Centaurium erythraea* Rafn., represent the best known and the most investigated medicinal plant species of genus *Centaurium*. Centaury has been used for centuries in traditional medicine. Secondary metabolites such as bitter secoiridoid glucosides (gentiopicrin, swertiamarin and sweroside), xanthones (eustomin and demethyleustomin), and phenolic acids are the main constituents responsible for the therapeutic properties of centaury. Previous investigation showed that overexpression of the *AtCKX* genes in transgenic centaury plants did not result in a decrease of total cytokinin (CK) content, but in an altered CK profile leading to a decline of bioactive, the most important physiologically active group of CKs.The aim of this study was to investigate antibacterial and antifungal activity of transgenic centaury methanol extracts as well as pure secoiridoid and xanthone compounds on four Gram positive, four Gram negative bacteria and eight species of microfungi. All tested methanol extracts of control and transgenic *AtCKX1* centaury shoots and roots showed better antibacterial activity, while pure compounds (gentiopicrin, swertiamarin, eustomin and demethyleustomin) showed better antifungal activity. The results obtained in this work suggest that centaury methanol extracts and pure compounds represent potential antimicrobials confirming the possibility of using these compounds in agronomy, veterinary, medicine or food industry.

Key words: antibacterial activity, antifungal activity, *AtCKX* genes, *Centaurium erythraea* Rafn., secondary metabolites

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