

Diethyl-Ether Flower Washings of *Dianthus cruentus* GRISEB. (Caryophyllaceae): Derivatization Reactions Leading to the Identification of New Wax Constituents

Biljana R. Dekić,^a Milenko N. Ristić,^a Marko Z. Mladenović,^b Vidoslav S. Dekić,^a Novica R. Ristić,^a Vladimir Ranđelović,^c and Niko S. Radulović^{c,*b}

^a Faculty of Natural Science and Mathematics, University of Priština, Lole Ribara 29, 38220 Kosovska Mitrovica, Serbia

^b Department of Chemistry, Faculty of Sciences and Mathematics, University of Niš, Višegradska 33, 18000 Niš, Serbia, e-mail: nikoradulovic@yahoo.com

^c Department of Biology and Ecology, Faculty of Sciences and Mathematics, University of Niš, Višegradska 33, 18000 Niš, Serbia

Some carnation species (*Dianthus* spp., Caryophyllaceae) exhibit a strong resistance to drought stress that is connected with the increased surface wax formation. Wax composition is unknown for the majority of *Dianthus* spp. Herein, mass spectral and gas chromatographic data, in combination with synthesis and chemical transformations (transesterification and synthesis of dimethyl disulfide adducts), enabled the identification of 151 constituents of diethyl-ether washings of fresh flowers of *Dianthus cruentus* GRISEB. from Serbia. The flower wax contained, along with the dominant ubiquitous long-chain *n*-alkanes, homologous series of *n*- and branched (*iso*- and *anteiso*-) long-chain hexyl alkanoates/alkenoates and alkyl/alkenyl benzoates. The branching position in the mentioned hexyl esters was probed by synthesis of esters of three isomeric hexanols that were spectrally characterized (¹H- and ¹³C-NMR, IR, MS). The washings also contained long-chain (*Z*)- and (*E*)-alkenes (C₂₃–C₃₅) with several different double bond regiochemistries. Fifty-five of these constituents (eight hexyl esters, two benzoates, and forty-five alkenes) were detected for the first time in Plantae, while ten of these represent completely new compounds. The rare occurrence of these wax constituents makes them possible chemotaxonomic markers of this particular *Dianthus* sp.

Keywords: *Dianthus cruentus*, wax, diethyl-ether washings, branched long-chain esters, internal long-chain alkenes, phytochemistry.