CHARACTERISATION OF VOLATILE COMPOUNDS AND METABOLITE PROFILES OF VINCETOXICUM ROOTS ISOLATED BY SUPERCRITICAL CO_2 AND PRESSURISED LIQUID EXTRACTION

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The growing interest in natural, biologically active compounds, coupled with the need for safer, more environmentally friendly alternatives to synthetic preparations, is driving more intensive research into medicinal plants. Particular attention is being paid to plant genera that have received limited study but have significant biological potential. One such genus is Vincetoxicum (Apocynaceae), whose species are characterised by a wide range of secondary metabolites and promising biological properties. This study aimed to isolate different fractions from the roots of three Vincetoxicum species and investigate their chemical composition using innovative extraction methods. Lipophilic fractions were obtained using supercritical carbon dioxide extraction (SFE-CO_2), while polar fractions were obtained using pressurised liquid extraction (PLE) with hydroethanol. The volatile compound composition of the plant raw materials and the SC-CO_2 extracts was analysed using GC×GC-TOF/MS, while the metabolite composition of the PLE extracts was determined using UHPLC-HRMS. GC×GC-TOF/MS analysis identified over 80 volatile compounds in the dry raw material and CO_2 extracts of Vincetoxicum roots. Preliminary phytochemical analysis of the hydrophilic extracts revealed over 20 compounds at identification level 1 (MS/MS match) and over 50 at level 2a. These results confirm the potential of Vincetoxicum species' roots as a significant source of biologically active compounds, providing a basis for further detailed biological activity and pharmacological studies.

Keywords: Vincetoxicum, phytochemistry, supercritical CO_2 extraction