Chemical composition of the essential oil of Perilla frutescens

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Perilla frutescens (L.) is an annual herbal medicinal, aromatic and functional food plant belonging to the mint family, Lamiaceae. The objective of this study was to determine and compare volatile profiles of three perilla varieties: *Perilla frutescens var. frutescens, Perilla frutescens var. crispa f. viridis and Perilla frutescens var. crispa f. purpurea* collected at summer period (June – September) 2021 in Slovakia. Based on the chemical composition of essential oil, perilla can be classified into the following 6 chemotypes: perillaldehyde type, elshotziaketone type, perillaketone type, perillene type, citral type and phenylprpopanoid type. Our interest was focused on investigating perillaldehyde type. The yield of essential oil extracted from areal part of perilla by hydrodistillation using the Clevenger apparatus ranged from 0.01 to 1.00 mL/100 g. Seven main compounds were identified by GC-MS and characterized with the predominance of perillaldehyde (40.24-64.43%) and limonene (5.16-27.14%). Essential oil contained also ß-caryophyllene (4.76-8.14%), trans-Shisool (5.38-7.28 %), trans-α-Bergamotene (0.91-5.29 %), 1-octen-3-ol (0.21-3.63%) and perilalcohol (1.03-1.75%). Other significant minor substances have also been identified as trans-2-hexenal, 1-hexanol, cis-3-hexenol, 3-octanol, trans-2-hexenol and linalool.

The results support previous findings that perilla is rich in natural compounds that can be used as a food additive for flavouring, in perfumery to add spicy odour and in traditional medicine use. The main volatiles of perilla were affected by genetics and cultivars more than by environmental conditions. Considering a broad diversity of perilla species and chemotypes, it is important to discriminate cultivated perilla species with identified chemotypes.

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