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A chemometric assessment and profiling of the essential oils from *Hibiscus sabdariffa* L. from Kurdistan, Iraq

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Abstract

Hibiscus sabdariffa L. is a tropical plant belonging to the Malvaceae family. In Kurdistan, the Autonomous Region of Iraq, water infusion of *H. sabdariffa* calyces is recommended for the treatment of hypotension and the common cold. Three distillation techniques: hydrodistillation (HD), steam distillation (SD), and solvent-free microwave-assisted extraction (SFME) have been compared to obtain the essential oils from calyces. The composition of the extracts was investigated by GC-FID and GC-MS. A total of 62 compounds have been identified, from which 55 components were found in HD distillates (95.75%), 37 components in SFME (96.06%), and 29 in SD (99.63%). Chemometric tools were applied to optimise and evidence the relation between distillation techniques and composition of the obtained essential oils as an investigation for the essential oils commercialisation approach of *Hibiscus sabdariffa* L. that have been done from a long time using conventional hydrodistillation in the local Herbal and Tea markets in Kurdistan.

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