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Analysis of biologically active oxyprenylated phenylpropanoids in Tea tree oil using selective solid-phase extraction with UHPLC−PDA detection

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Highlights

1) Oxyprenylated phenylpropanoids as additional components of tea tree oil

2) Development of an original UHPLC analytical method on tea tree oil

3) New insights into the therapeutic potential of tea tree oil

Abstract

An efficient analytical strategy based on different extraction methods of biologically active naturally occurring oxyprenylated umbelliferone and ferulic acid derivatives 7-isopentenyloxycoumarin, auraptene, umbelliprenin, boropinic acid, and 4'-geranyloxyferulic acid and quantification by UHPLC with spectrophotometric (UV/Vis) detection from Tea tree oil is reported. Absorption of the pure oil on Al_2O_3 (Brockmann activity II) prior washing the resulting solid with MeOH and treatment of this latter with CH_2Cl_2 resulted the best extraction methodology in terms of yields of oxyprenylated secondary metabolites. Among the five *O*-prenylphenylpropanoids herein under investigation auraptene and umbelliprenin were never detected while 4'-geranyloxyferulic acid was the most abundant compound resulting from all the three extraction methods employed. The UHPLC analytical methodology set up in the present study