

Supercritical Fluid Extraction of New Amides from *P. hispidum*

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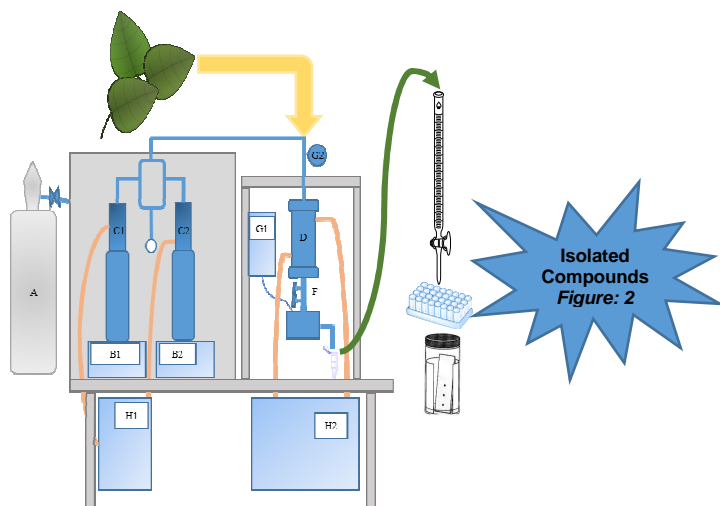
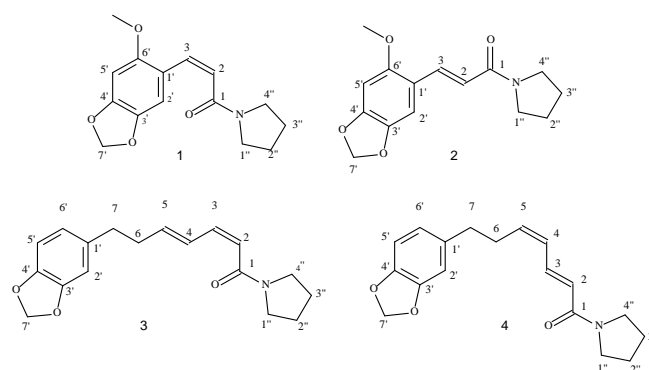
Introduction

Nowadays, the supercritical fluid extraction using carbon dioxide is widely used as a sustainable process in wide variety areas, including the food industry, pharmacy and environmental engineering¹. In this context, having knowledge that supercritical extraction technique achieved large number application process, as well as, bioactive compounds in the genus *Piper*, this work focuses the first study about supercritical fluid extraction of amides compounds of *Piper hispidum* dried leaves using carbon dioxide. The extraction was conducted at 353 K and 22 MPa.

Figure 1: Experimental apparatus used for supercritical CO₂ extraction. A, CO₂ cylinder; C1 and C2, syringe-type pump; B1, B2, pump controller; G2, pressure gauge; G1, temperature indicator; F, needle valve and micrometric valve; D, reservoir collection; H1 and H2, thermostatic bath.

(1 D, 2D), IV and GC-MS allowed identify the substances: N-[3-(6'-methoxy-3', 4'-methylenedioxyphenyl)-2 (Z) propenoyl] pyrrolidine (1), N-[3-(6'-methoxy-3', 4'-methylenedioxyphenyl)-2 (E) propenoyl] pyrrolidine (2), N-[7 (3', 4'-methylenedioxyphenyl)-2 (Z), 4 (E)-heptadienoyl] pyrrolidine (3) and N-[7 (3', 4'-methylenedioxyphenyl)-2 (E), 4 (Z)-heptadienoyl] pyrrolidine (4), among these substances only 1 was cited in the literature on *P. hispidum*², the others were first reported in the specie, being 3 and 4 unpublished in the literature.

Figure 2: Isolated and identified substances in phytochemical study of the SC-CO₂ extract of *P. hispidum*.



Results and Discussion

Resulting in a yield of 1.64%. GC-MS analysis identified 23.26% of substances. Germacrene-D (9.38±0.70%) and squalene (6.43±0.55%) were the main compounds. To increase identification percentage, compounds initially not identified, were isolated from SC-CO₂ extract applying column chromatography followed by preparative thin layer chromatography. Spectroscopic analysis such RMN

Conclusion

The isolation allowed to identify four amide compounds (1, 2, 3 and 4), of which 2, 3 and 4 are until now was not published in *P. hispidum* literature being 3 and 4 inedited at the records. Increasing to 91.29% the substances identified present in the supercritical extract.

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