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Title: Winter savory: supercritical carbon dioxide extraction and mathematical modeling of extraction process

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1 **Winter savory: supercritical carbon dioxide extraction and mathematical modeling of**
2 **extraction process**

3 **Running Title:** *S. MONTANA* SUPERCRITICAL EXTRACTS

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11
12 **Abstract**

13 Main objective of this work was to investigate the influence of pressure and temperature on
14 supercritical carbon dioxide extraction of *Satureja montana* in terms of extraction yield and
15 chemical composition. The most dominant compound in all investigated extracts was
16 oxygenated monoterpene-carvacrol. The kinetics of the supercritical carbon dioxide extraction
17 of *S. montana* as well as the solubility data were investigated by modelling the extraction
18 curves using different empirical models and all models used showed similar deviation from
19 experimental data. Hierarchical cluster analysis was employed in order to reveal possible
20 similarities and dissimilarities among the extracts obtained at different extraction conditions.

21
22 **Keywords:** *Satureja montana*, supercritical extraction, carvacrol, mathematical modeling

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