

Characterization of Fatty Acid Profile, Tocochromanols and Phytosterols Composition of Black Cumin and Lupine Oils obtained by Supercritical CO₂ Extraction

Dominik Kmiecik^{1*}, Monika Fedko², Aleksander Siger¹

¹Faculty of Food Science and Nutrition, Poznań University of Life Sciences, Wojska Polskiego 31, 60-624 Poznań, Poland *dominik.kmiecik@up.poznan.pl
²Institute of Food Science, Warsaw University of Life Sciences, 159c Nowoursynowska St., 02-787 Warsaw Poland

AIM

The aim of this study was to characterize oils from black cumin and lupine obtained by supercritical CO₂ extraction using ethanol as a co-solvent.

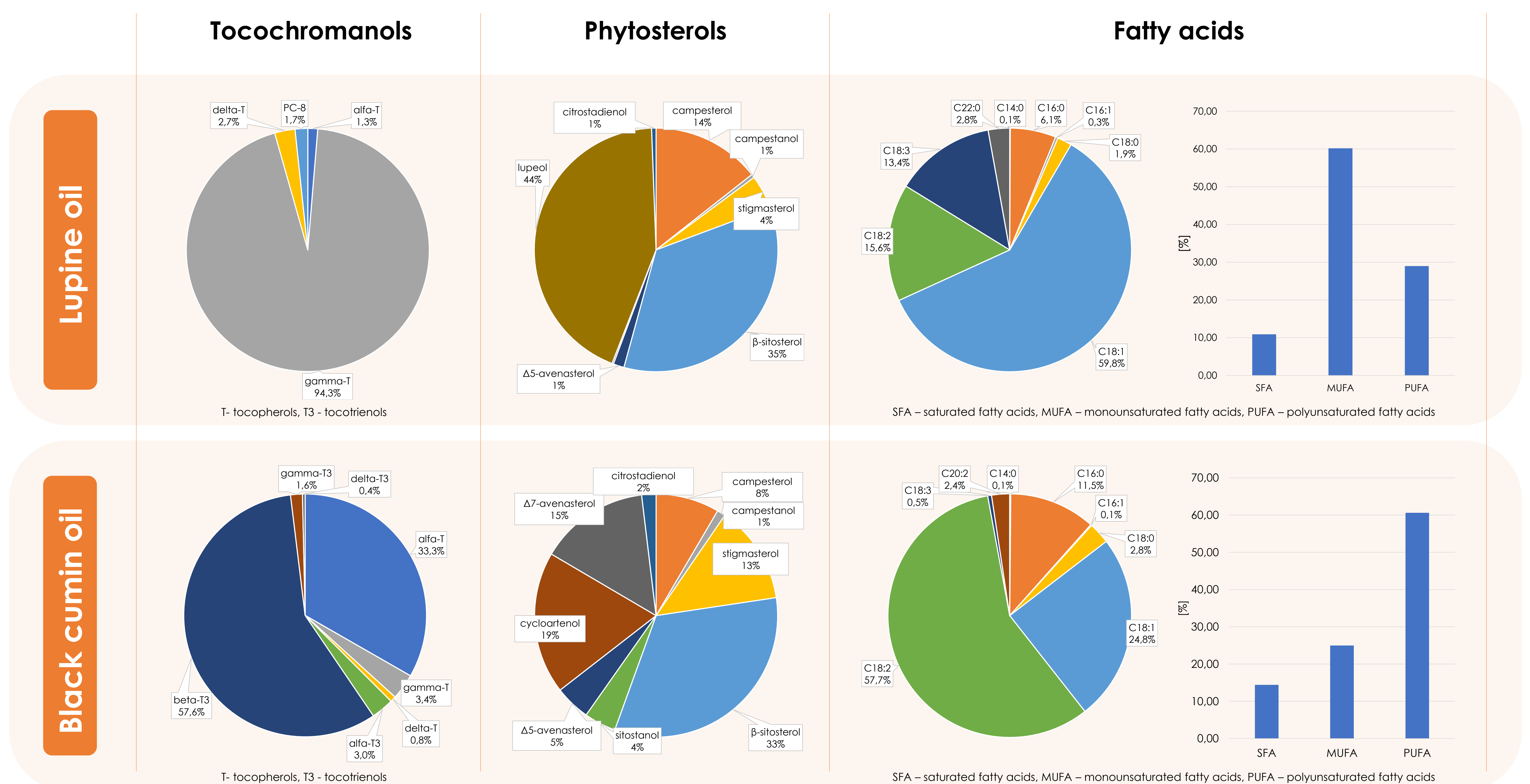
MATERIALS AND METHODS

SFE extraction process conditions were as follows: temperature 50°C and pressure 300 bars. The oils were characterized by evaluating the fatty acid profile, the content of tocochromanols and phytosterols.

RESULTS



	Tocochromanols content (mg/100g oil)	Phytosterols content (mg/100 g oil)
Lupine oil	189.49±2.00 ^a	1917.86±4.27 ^a
Black cumin oil	28.97±0.12 ^b	219.41±3.39 ^b



CONCLUSIONS

- The composition and content of biochemical compounds in lupine oil and black cumin oil were very different. Lupine oil was characterized by several times higher content of tocochromanols (6.5 times) and phytosterols (8.7 times).
- In lupine oil, γ-tocopherol (178.67 mg/100 g oil) was identified in the highest amount. In oil from black cumin, the main tocochromanols were β-tocotrienol (T3) (16.18 mg/100 g oil) and α-tocopherol (9.64 mg/100 g oil).
- In lupine oil, the sterols with the highest amount were lupeol (837.03 mg/100 g oil) and β-sitosterol (672.36 mg/100 g oil). In oil from black cumin, the main sterols were β-sitosterol (73.57 mg/100 g oil) and cycloartenol (42.40 mg/100 g oil).
- The main fatty acids identified in lupine oil were oleic acid (59.84%), linoleic acid (15.6%), and linolenic acid (13.39%). The main fatty acids in oil from black cumin were linoleic acid (57.69%) and oleic acid (24.84%).

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