

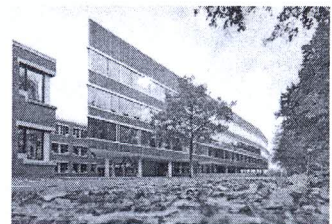


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**P1: Comparative analysis of fatty acid composition of saffron (*Crocus sativus* L.)
from different origins**

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Abstract

The quality and chemical composition of saffron (*Crocus sativus* L.) are affected by the region in which, saffron is grown, the drying process, the conditions of packaging and storage of saffron.

The objective of this study was to compare fatty acid composition of saffron samples from different origin. Saffron samples were taken from markets in Hungary, Greece and Spain. Fatty acids were extracted in hexane:isopropanol (50:50, vol/vol). Fatty acids were than trans-esterified with BF₃/methanol into fatty acid methyl esters (FAMES), which were analyzed using Agilent 7890 gas chromatograph with a flame ionization detector. Reliability and accuracy of the analytical method for the detection of fatty acids were ensured by use of the certified reference matrix that consisted a mixture of 37 FAME standards (Supelco 37 Component FAME mix, Sigma-Aldrich). The content of the particular component is expressed as percentage from the sum of all analyzed fatty acids.

According obtained results fatty acid profile of Hungarian saffron samples was composed of: lauric acid (C_{12:0}) 7,675%; myristic acid (C_{14:0}) 3,343%; palmitic acid (C_{16:0}) 37,101%; heptadecenoic acid (C_{17:1}) 0,273%; stearic acid (C_{18:0}) 9,939%; oleic acid (C_{18:1n9c}) 3,102%; linoleic acid (C_{18:2n6c}) 24,966%; and linolenic acid (C_{18:3n3}) 14,209%. Fatty acid profile of Spanish saffron samples was composed of: pentadecanoic acid (C_{15:0}) 6,094%; palmitic acid (C_{16:0}) 21,434%; stearic acid (C_{18:0}) 1,683%; oleic acid (C_{18:1n9c}) 10,135%; linoleic acid (C_{18:2n6c}) 52,68%; and linolenic acid (C_{18:3n3}) 7,971%. The most abundant fatty acid in Greek saffron samples was linoleic acid (C_{18:2n6c}) 40,104%, than follow: palmitic acid (C_{16:0}) 33,910%; oleic acid (C_{18:1n9c}) 10,397%; linolenic acid (C_{18:3n3}) 10,206%; lauric acid (C_{12:0}) 4,229% and pentadecanoic acid (C_{15:0}) 1,153%. Highest content of unsaturated fatty acids have Spanish saffron samples (14,24% more than Greek, and 39,81% more than Hungarian samples ($p < 0,05$)). Saturated fatty acid in highest content were present in Hungarian samples (31,69% more than Greek, and 49,15% more than Spanish samples ($p < 0,05$)).

The differences in fatty acid profiles of analyzed saffron samples could be result of different conditions of harvesting, draying, packaging and storage.