

Fatty acids profile of monovarietal Arbosana Brazilian extra virgin olive oils

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Palavras-chave: Brazilian olive oils, FAME, Arbosana, identity standard for olive oils.

Highlights

The profile of fatty acids is an important marker for the identity of olive oils. Eleven samples of monovarietal Arbosana Brazilian olive oils were analyzed. Three did not pass the regulation limits, but experimental evidence from other regions points out this may be due to edaphoclimatic variations in plant metabolism, rather than adulteration.

Abstract

Arbosana is an olive variety originary from Spain. It has been cultivated in Chile, USA, Uruguay, Australia, and Argentina. In Brazil, Arbosana has been grown in the Serra da Mantiqueira, both in Minas Gerais (MG) and São Paulo (SP) states, as well as in Rio Grande do Sul (RS). The profile of fatty acids, expressed as a percentage of their methyl esters (FAME), is an important parameter for the identity standard of olive oils. Contents outside of specific ranges are indicative of adulteration with other oils. In Brazil, the contents for the different fatty acids are established by official normative,¹ which mirrors that of *Codex Alimentarius*. The FAME for 11 samples of olive oils from Arbosana cultivars were prepared and analyzed by gas chromatography.² The fatty acids contents for all samples were within the legal limits, except for a single fatty acid, (Z)-10-heptadecenoic (C17:1), in 3 samples from RS (Table 1: RS1, RS2 and RS3). Similar out-of-limit figures have been reported for Arbosana and other varieties cultivated in several areas in the Americas.³ Based on these experimental data, the International Olive Council (IOC) has raised the limit of C17:1 to 0.6 % in 2016. This change, however, was not followed, so far, by the *Codex Alimentarius*, neither by the Brazilian authorities.¹ Collect experimental evidence of national olive oils from certified precedence is useful to establish more adjustable limits to food composition, which reflect the effects of the edaphoclimatic conditions on the plant metabolism and, therefore, in the oil composition. The analyses and gathering of data shall support changes in the legislation for olive oils in Brazil.

Table 1. Fatty acids in Brazilian olive oils from Arbosana variety (in %).

Fatty acid	Samples and States											Official Limits
	MG1	RS1	RS2	RS3	RS4	RS5	SP1	MG2	RS6	RS7	RS8	
C16:0	12.09	15.77	15.55	15.62	13.85	16.80	14.56	11.13	14.67	16.37	12.09	7.5-20.0
C16:1	1.42	1.85	1.93	1.81	1.54	2.72	1.69	1.07	1.94	2.38	1.42	0.3 - 3.5
C17:0	0.09	0.13	0.14	0.13	0.12	0.10	0.12	0.09	0.08	0.09	0.09	≤0.3
C17:1	0.24	0.32	0.33	0.31	0.30	0.25	0.29	0.24	0.20	0.23	0.24	≤0.3
C18:0	1.76	2.20	2.08	2.08	2.00	1.86	2.04	1.86	1.91	1.94	1.76	0.5 - 5.0
C18:1	75.98	68.78	69.51	69.04	72.70	65.22	71.05	78.92	70.68	66.36	75.98	55.0 - 83.0
C18:2	5.72	8.34	7.67	8.35	6.67	10.76	7.62	4.12	7.96	10.10	5.72	3.5 - 21.0
C18:3	0.74	0.86	0.88	0.84	0.92	0.82	0.82	0.72	0.86	0.80	0.74	≤0 1.0
C20:0	0.39	0.42	0.44	0.42	0.43	0.39	0.42	0.38	0.42	0.40	0.39	≤0.6
C20:1	0.39	0.30	0.31	0.30	0.37	0.30	0.33	0.38	0.35	0.29	0.39	≤0.4
C22:0	0.16	0.16	0.17	0.15	0.18	0.16	0.16	0.16	0.17	0.15	0.16	≤0.2

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