Sesame Oil Is Very Low in Linolenic Acid

Sir:

In an interesting article "Application of Principal-Component Analysis on Near-Infrared Spectroscopic Data of Vegetable Oils for Their Classification," T. Sato presented a very useful and simple automated method to classify vegetable oils according to their fatty acid composition (1). The method utilizes near-infrared spectra (region 1600–2200 nm) and principal-component analysis. Results obtained by this method were found to be comparable to those obtained by conventional gas chromatography (GC) of fatty acid methyl esters.

Although the GC results for soybean, corn, cottonseed, olive, and peanut oils in Sato's work were comparable to the range given by the Codex Committee on Fats and Oils (2), those of sesame and rapeseed oils were not (Table 1). Sato reported 11.8–12.2% linolenic acid (18:3) in sesame oil, which is generally known to have <1% of this acid. Sesame cultivars from Sudan and from many other parts of the world showed fatty acid ranges essentially falling within the Codex ranges (Ref. 3, and references cited therein).

As Sato used commercial vegetable oils, one possibility for the high 18:3 percentage in sesame oil is adulteration with a high 18:3 oil, such as linseed oil. However, the fact that the rapeseed oils analyzed in Sato's paper (1) contained an average of 1.11–2.15% instead of 5–16% of 18:3 suggests that the results of sesame and rapeseed oils in Sato's work may have been mixed up, either by sample mislabelling or through mistakes during data processing. One way to check for such types of errors is by comparing results from new experiments with previously published and established results.

TABLE 1
Ranges of Fatty Acid Composition (%) of Rapeseed and Sesame Oils Reported by Sato (Ref. 1) (n = 3) Compared to the Ranges of the Codex Committee on Fats and Oils (Ref. 3)

Fatty acid	Rapeseed oil		Sesame oil		
	Sato	*Codex Alimentarius*	Sato	*Codex Alimentarius*	Previous work[a]
16:0	10.9–13.0	1.5–6.4	3.6–3.9	7–12	8.6–16.7
16:1	0.1–0.7	<3.0	0.2–0.3	<0.5	≤0.5
18:0	2.6–3.0	0.5–3.1	1.6–1.8	3.5–6.0	2.3–6.8
18:1	39.6–42.5	8–45	58–60	35–50	32.7–53.9
18:2	34.8–39.6	11–29	20.7–22.4	35–50	34.6–59.0
18:3	1.1–2.1	5–16	11.8–12.2	<1.0	≤1.0

[a]Results on sesame oils from different parts of the world from 15 references are summarized in Reference 3. Although the percentages of 16:1 and 18:3 in sesame oils from these previous works were not included in Reference 3, they were ≤0.5 and ≤1.0, respectively.

REFERENCES

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