

Letter to the Editor

Influence of Higher Saturated Fatty Acids on the Bellier Turbidity Temperature Test Values of Vegetable Oils

Sirs:

It is generally believed that Bellier Turbidity Temperature (BTT) test values for *Arachis* (groundnut) oil depend on the relative insolubility of arachidic acid (C20:0) in 70% ethyl alcohol (1,2). As seen from Table I, groundnut oil has a BTT of 39-41 C. The test thus forms a useful guide to the purity of groundnut oil (2). Investigations carried out at our laboratory have shown that this high BTT value of groundnut oil compared with other vegetable oils is not due to the insolubility of arachidic acid but to the lignoceric acid (C24:0) present in groundnut oil.

As indicated in Table II, addition of lignoceric acid at 2.0% level to sesame oil increased the BTT value of this oil from 22 C to 40 C whereas arachidic or behenic acids added to sesame oil did not cause any change in BTT value. Evidently, it is the lignoceric acid in groundnut oil which is responsible for the high BTT value. There is no direct relationship between the added lignoceric acid and the BTT value of vegetable oil. However, higher concentrations of lignoceric acid present in an oil improve the perception of turbidity.

In conclusion, BTT values prescribed for certain vegetable oils under the mandatory food laws in some countries need reconsideration in view of the new hybrids of oilseeds being developed with and without lignoceric acid in the oils.

M.N. Krishnamurthy, S. Rajalakshmi and O.P. Kapur
Central Food Technological Research Institute
Mysore 570013, India

TABLE I

Bellier Turbidity Temperature (BTT) Test Values and Higher Saturated Fatty Acids in Vegetable Oils

Vegetable oils	BTT °C	20:0	22:0	24:0	Total
Groundnut	39-41	1.7	3.1	1.7	6.5
Mustard	29.5	0.7	1.5	0.3	2.5
Sesame	22.0	0.5	0.3	—	0.8
Niger	26.0	0.5	0.5	—	1.0
Rapeseed (low erucic)	17.0	0.3	0.3	—	0.6
Olive	9.0	—	—	—	—

TABLE II

Effect of Added Arachidic, Behenic and Lignoceric Acids on BTT of Vegetable Oils

Vegetable oil and fatty acid	BTT °C
Groundnut and 2% arachidic	40.0
Groundnut and 2% behenic	40.0
Groundnut and 2% lignoceric	40.0
Sesame and 2% arachidic	22.0
Sesame and 2% behenic	22.0
Sesame and 2% lignoceric	40.0
Palmolein and 2% lignoceric	40.0

REFERENCES

1. Evers, N., *Analyst* 62:96 (1937).
2. *Official Methods of Analysis*, 12th Edn., AOAC, Arlington, VA, 1975, Sec. 28.101-28.102.

[Received June 28, 1985]