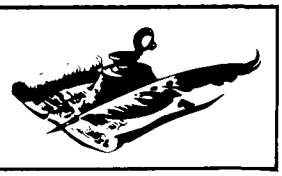
Letters to the Editor



Need for Correlation of Chemical and Sensory Rancidity Tests

Sir: In the review paper of Gray (1), dealing with chemical tests for oxidation of oils, the limitations of many of the various tests are discussed. In the very short section in this review paper on "Organoleptic Evaluation," it states that: "Ultimately these results (i.e., results from chemical tests) must support the sensory measurements." Methodology for measuring rancidity by sensory methods is not clearly described. In fact, the reader might imply that sensory methods are so lacking in "reproducibility, sensitivity, and quantitativeness" as to be unsuitable for use by a scientist.

In the experience of this writer which he has pointed out (2) when using any of the rancidity tests such as TBA or peroxide value, at least for fish oils, for any selected degree of rancidity the chemical value may vary considerably. This variation in value will depend upon such factors as the storage temperature during development of rancidity or whether an antioxidant was present or not. Any prudent scientific investigator will need to check the values of whatever chemical test or tests he is using against a scientifically designed sensory test involving the use of a trained sensory panel. Such "calibration" of the chemical values corresponding to different degrees of rancidity will need to be repeated especially where differing storage conditions prevail.

It is unfortunate that the review of Gray (1) did not include discussion of this problem and mention made of appropriate sensory methodology to be checked against the chemical tests by citing such approaches as have been described by Amerine, Pangborn, and Roessler (3).

The idea which one might assume from reading the article of Gray (1) as well as other material in the literature that the knowledge of a chemical value alone can predict the extent of rancidity based upon sensory evaluation is not valid. Other information such as a knowledge of the conditions under which the oil was stored before analysis is also necessary before any reliable estimate of the sensory rancidity degree can be reached.

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REFERENCES

1. Gray, J.I., JAOCS 55:539 (1978).
2. Stansby, M.E., "Industrial Fishery Technology," Robert E. Krieger Publishing Co., Huntington, NY 1976, p. 372.
3. Amerine, M.A., R.M. Pangborn, and E. B. Roessler, "Principles of Sensory Evaluation of Foods," Academic Press, New York, 1965.

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Thermal Decomposition of BHA

Sir: We would like to make some observations concerning the article "Study of the Accelerated Oxidation of Low and High Erucic Rapeseed Oil" by Erkilla et al., which appeared in the March 1978 edition of your Journal.

As major manufacturers of BHA, and the only European maker, we are surprised by the statement that "BHA is decomposed thermally between 110 and 140 C." Whilst we would not dispute the fact that BHA was lost from the silicone and rapeseed oils under the experimental conditions, we believe that this is due to the volatility of BHA rather than thermal decomposition. The vapor pressure of BHA at 130 C is about 5 mm Hg and, as large quantities of gas were passed through the oil, significant losses by evaporation must be expected. Significant thermal decomposition does not occur at 110-140 C; indeed, commercial BHA is commonly purified by a fractional distillation, under vacuum, at temperatures in the region of 150-200 C. The thermal stability of an antioxidant is, of course, important as temperatures of 110-140 C and above are commonly encountered in food processing operations.

We hope you will give us the opportunity of correcting any false impressions that users or potential users of BHA may have got from the statement in the above-mentioned paper by publishing these comments.

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