Summary of Discussion Session D-1 on Trading and Quality

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Discussion session chaired by M. Pike and E.J. Campbell; the panel consisted of J.L.T. Pritchard, J.B. Rossell, D.A. Shave and R.T. Sleeter.

This brief discussion session opened with consideration of the quality of sunflower oil and whether the trade should impose more stringent standards on the crude oil, particularly in relation to its wax content. The wax in sunflower oil was known to come predominantly from sunflower shells (hulls); oil from extraction plants which incorporate a decortication step is significantly lower in wax content than the oil from plants that process undecorticated seed. The refining trade would certainly like to see wax contents specified in contracts but unfortunately no acceptably satisfactory test has yet been devised. There would be no advantage in trading sunflower oil in a crude degummed form (as is common with soybean oil), since the problems were derived from waxes and not gums. A suggestion that the "impurities" definition could be widened to include waxes found little support; impurities were traditionally understood to refer to materials insoluble in petroleum ether and to extend this definition to include petrol soluble constituents even for only one particular oil would cause unnecessary confusion. Unlike coconut, soybean, and palm oils, there is no internationally recognized body dealing specifically with sunflower with whom trading standards for the quality of sunflower seeds and sunflower oil can be agreed. However, Trade Associations such as FOSFA, American Fats and Oils, and NCPA suggest quality specifications and contract terms for sunflower seed and sunflower oil which are widely accepted at present.

In principle, there is no reason why contracts could not specify sunflower oil from decorticated seed or dewaxed sunflower oil or set an upper limit for wax content. In such a situation a premium would be demanded by the producer to compensate for the installation of decortication and/or dewaxing facilities. Would the trade be prepared to pay such a premium?

Discussions on analytical techniques that could be used to detect adulteration concentrated on three major areas: contamination of refined oil by used frying oils; deliberate addition of palm fractions, in particular stearin to palm oil; and possible adulteration in the future, of known vegetable oils, by fungal and microbial fats resulting from advances in genetic engineering.

General conclusions on these three points could be summarized. Recycled frying oils could be detected by increases in both unsaponifiable content and viscosity arising from the presence of polymers; the enhancement of Totox value (2× peroxide value + p-anisidine value); and the presence of fatty acid molecules with unusual double bond positions and configuration. Rossell's paper had already indicated that, due to the wide natural variation in the composition of palm oils and the range of stearin fractions available, it was impossible to detect adulteration unequivocally. A speaker from Malaysia added that in his opinion, a Malaysian palm oil with a melting point in excess of 39 C should be suspect. It was considered to be quite possible for genetic engineering to lead to the production of fats similar in composition to known vegetable oils and, as a consequence, the fear of adulteration could arise. However, the cost of this technology is likely to be high and this would limit adulteration to inclusion in higher value fats such as cocoa butter. It is impossible to predict, in advance of their development, how easily detectable such adulteration might be, although it might be expected that sterols and other trace constituents would differ significantly from plant-derived oils and fats and that this could provide the basis for detection.

The alternative of basing specifications solely on performance and composition, rather than purity of origin, which would eliminate claims of, or indeeed the need for, adulteration, was briefly considered. Although this approach might have some attractions, the trade was considered to be largely opposed to such a departure from tradition. Moreover, the labeling regulations and consumer preferences of many countries demand details of source of raw materials and constituents.

Several specific queries on the efficiency of particular items of analytical equipment and their interfacing with computer systems were also discussed. It was noted that some instrumental methods of analysis, e.g., seed oil content and solid fat content of oils by NMR; protein, fat and moisture content by infrared techniques had been approved, or were undergoing international collaborative testing, for contractual purposes.

The question of whether fitness for human consumption could be directly determined was raised but it was generally felt that this was, in practice, impossible, unless some guidance is given at the time of what nonnutrient factors were suspected, for example, pesticides or petroleum residues, in which case specific analyses would be performed.