

Comparison of Soxhlet and Soxtec Methods to Determine the Most Efficient Method for Crude Fat Extraction of Fast Foods and Suitability of the Soxtec Method for Crude Fat Extraction at Low Temperatures

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Inclusion of information on fat/lipids content in food products is a mandate according to the commercial regulation. Soxhlet extraction method is an officially recognized commonly used method for crude fat extraction of foods. Further the Soxtec method provides a faster approach in which the extraction is done at high temperature conditions. However, low temperature fat extraction has a notable importance in analyzing the fatty acid profile including *trans* fats. In the present study, Soxhlet and Soxtec methods were compared to find out the most efficient method for crude fat extraction of fast foods and to determine the suitability of low temperature (70 °C) for crude fat extraction. Crude fat extraction of fish rolls were conducted using both Soxhlet (at 70 °C, extraction time 6 h) and Soxtec (at 130 °C, extraction time 1 h) methods. Water extraction of fish rolls samples were done to identify the effect of water extraction of samples to the Soxtec extraction. Another series of crude fat extraction for chicken fried rice was done using Soxtec method at 70 °C using different time combinations (2 h, 5 h, and 6 h). Hexane (boiling point 69 °C) was used as the extraction solvent. Both Soxhlet extraction at 70 °C and Soxtec extraction at 130 °C resulted equal amounts of crude fat contents in Chinese fish rolls. The extraction time needed for Soxtec extraction at 70 °C in chicken fried rice, to provide an equivalent crude fat content as in Soxtec extraction at 130 °C exceeded 6 hours. The Soxtec extraction at 130 °C was time effective than the Soxhlet extraction at 70 °C. Considering the results, Soxhlet method at 70 °C exhibited to be more suitable for crude fat extraction for fatty acid analysis when compared with Soxtec method at 70 °C considering the additional time for water extraction if required. The purpose of doing fat extraction of a sample will be the determinant in-selecting the most appropriate fat extraction method.

Key words: Crude fat extraction, Low temperature, Soxhlet method, Soxtec method, Water extraction