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Title: Characterization Of Oxidative Stability For Oils And Fats By TG/DTA

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Abstract:

The oils and fats is susceptible to oxidation degradation which sometimes forms the toxic materials as well as changes the smell, the taste, or the color of the foods. Thus many countries establish the food-safety standards. In Japan, the analytical method of the acid value and the peroxide value are used as the official method of analyses for evaluating the food oxidation degradation. However, these methods require the extraction of the oil and fat content resulting in the many operations and much time. Moreover, as these methods extract only the oil and the fat content of the food, only the oil and the fat content are evaluated. Hence the deterioration behavior of the whole food including the additives and the other blended components cannot be evaluated. The easier method of TG/DTA is introduced to evaluate oxidation degradation of oils and fats¹). It is one of the accelerated test method and performs the Oxidation Induction Time (OIT) measurement which accelerate the oxidization by introducing the Oxygen gas. This method shorten the time dramatically as it does not require the preparation compared to the conventional method. Also, the small amount of sample can be measured. Furthermore, the whole food including the additives and the other blended components can be measured. Thus the influence on the deterioration behavior by the other components and the oil and fat component can be evaluated. In this study, with regard to the cooking oil and the fatty acid, the relationship between the oxidation degradation and the content of saturated fatty acid and the number of unsaturated bond is evaluated. The result indicates that the more saturated fatty acid based cooking oil includes saturated fatty acid, the less it is susceptible to oxidation. Also, unsaturated fatty acid which has the different number of unsaturated bond has a trend to be susceptible to oxidation. This method can be applied to the process food such as the instant noodles and snacks including the additives and the other blended components. REFERENCE 1. Shinichi Kohyama, Takahiro Kashima, Report of Industrial Technology Center Gifu Prefecture Government, No.1, 33-36 (2007)