

DSC Measurements of Oils and Fats for Foods

1. Introduction

Oils and fats generally have complex polymorphic structures. DSC measurement of the various melting phenomenon of oils and fats can be used to evaluate quality and stability of products. DSC can also be applied to the discrimination of different oils and fats.

This brief includes the measurement results for four kinds of edible oils and fats using hermetically sealed sample containers.

2. Methods and Data

2-1 Crystal Structure Changes

Figure 1 shows DSC curves for melting cacao butter. A melting peak shape difference can be observed. It is obvious that the crystal form changes according to the thermal history of the cacao butter.

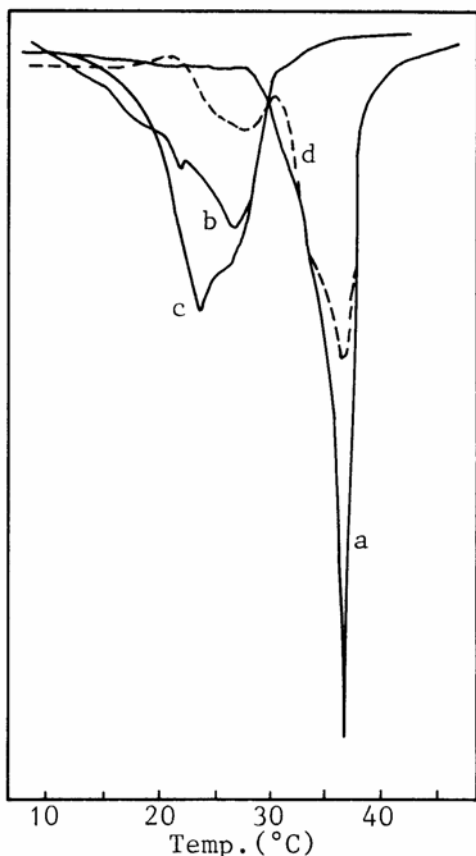


Figure 1 DSC curves of Cacao Butter

Sample weight : 19.38mg

Heating rate : 0.6°C/min

a : untreated

b : after melting, kept at 10°C for 1hr.

c : after melting, kept at 10°C for 210hr.

d : after melting, kept at 30°C for 984hr.

2-2 Discriminating Between Different Oils and Fats

Figure 2 shows the measurement results for three kinds of food oils and fats. Differing DSC patterns can be observed for each kind of oil.

3. Conclusions

DSC with hermetically sealed sample containers can be used to analyze the quality and types of fats and oils.

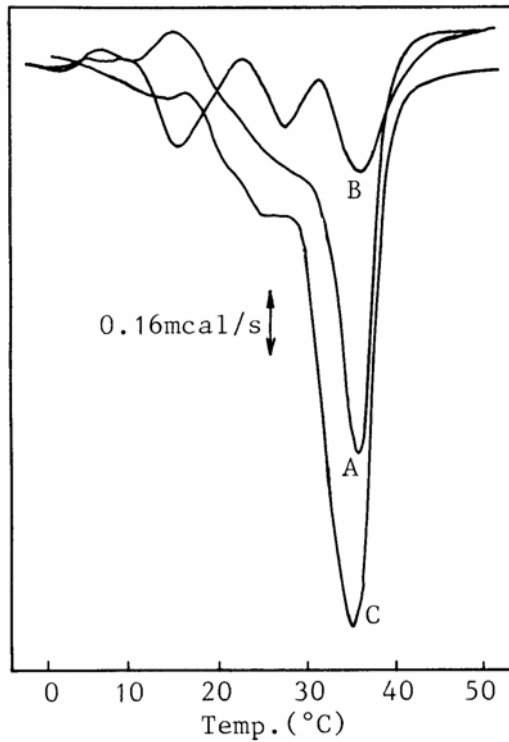


Figure 2 DSC curves of Three Kinds of Oils and Fats
Sample weight : 30mg
Heating rate : 0.6°C /min