



Study of yoghurt formation

Application

Food

Objective

Determination of the gelation point of milk for yoghurt

Device

TURBISCAN® LAB

INTRODUCTION

A yoghurt is made by inoculation of milk with bacteria, which, between 42 and 44°C, will grow and reject some lactic acid. This acid is responsible for the coagulation of the casein micelles and the gelation of milk into yoghurt.

The study of this gelation process is usually done by a measurement of the pH. However, the variation of pH is quite small (from 6.5 to 4.5) and gives little information on the actual process.

We have followed the formation of yoghurt with a Turbiscan LAB, which exists in a thermoregulated version, enabling to maintain the sample at the temperature required for the growth of the bacteria. The analysis allows a close follow-up, in real time, of the gelation process and can give additional information regarding the measurement of the syneresis of the product and its stability with time.

METHOD

The yoghurt is made directly in the Turbiscan LAB measurement cells. 20 mL of UHT whole milk were put in the cell and left at 43°C for one hour.

A ferment, containing *Lactobacillus Bulgaricus* and *Streptococcus Thermophilus* was diluted in milk at 25g/L. It was used to inoculate the pre-heated milk.

The process of gelation of milk into yoghurt was followed for 18 hours, doing one scan every 10 minutes at 43°C. A measurement of the pH was made in parallel, in order to correlate results coming from both techniques.

RESULTS

Gelation of milk giving yoghurt is due to the coagulation of casein micelles, forming a network, hence the solidification of milk. This process is very easy to visualise using the Turbiscan LAB_{thermo} and studying the evolution of the backscattering level with time.

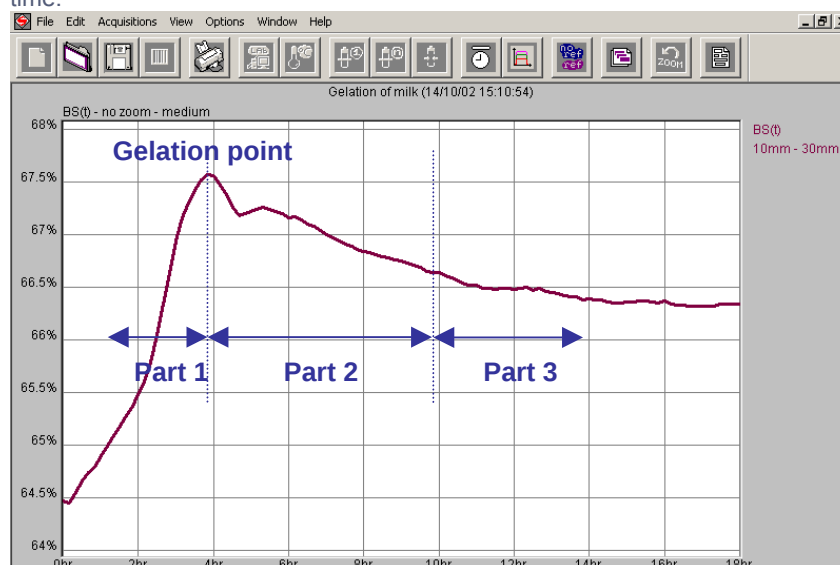


Figure 1. Kinetics of flocculation