

Skim Milk Powder Method

Scope

- Assess gelling ability of proteins in skim milk powder (SMP).
- Quality control of SMP manufacturing process.

Rapid Visco Analyser

The Rapid Visco Analyser (RVA) is a cooking stirring viscometer with ramped temperature and variable shear profiles optimized for testing viscous properties. The instrument includes international standard methods as well as full flexibility for customer tailor-made profiles. Combining speed, precision, flexibility and automation, the RVA is a unique tool for product development, quality and process control and quality assurance.



Description

The gelling abilities of proteins in skim milk powder (SMP) can be assessed by heating and cooling in buffer in the RVA. The processing methods used to manufacture SMP, including time, heat and shear settings, have a marked effect on the protein inherent in the sample. SMP quality can also be affected by constituent, seasonal and storage factors. The RVA can be used to reveal the effects of these factors on the viscosity potential of the SMP.

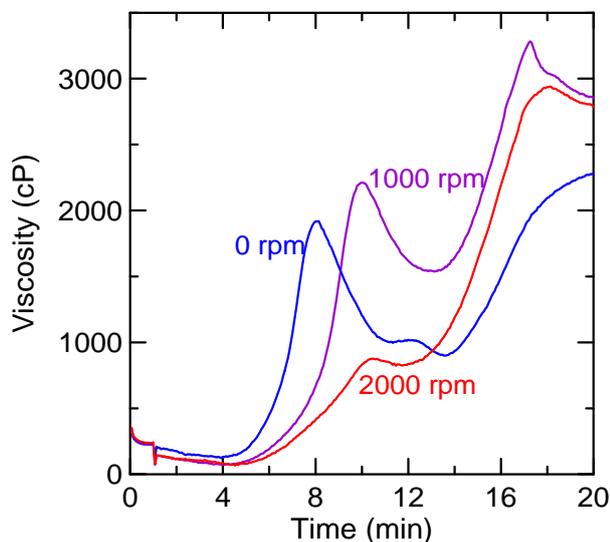


Fig. 1. Effect of shear during pre-processing of skim milk powders on their subsequent RVA viscosity traces. Other pre-processing conditions: 92 °C, 150 s prior to evaporation and spray drying. Effects of pre-processing time and temperature can similarly be measured.

Method

Twenty-minute pasting profile.

Sample Preparation

15.56 g sample (dry weight basis) and X g BTP pH 6.5 Buffer to make total weight of 35.00 g. Cover with rubber stopper and shake vigorously to disperse.

Preparation of BTP (Bis-Tris-Propane) pH 6.5 Buffer

10 mM BTP (Sigma), adjust to pH 6.5 using 1 M sodium hydroxide/lactic acid.

Profile

Time	Type	Value
00:00:00	Temp	50°C
00:00:00	Speed	1000 rpm
00:01:00	Speed	160 rpm
00:01:00	Temp	50°C
00:04:30	Temp	90°C
00:09:30	Temp	90°C
00:15:00	Temp	30°C
00:20:00	End	
Idle Temperature: 50 ± 1°C Time Between Readings: 4 s		

Measure

PV: Peak viscosity (cP)

TV: Trough viscosity (cP)

PT: Peak temperature (°C)

TT: Trough temperature (°C)

FV: Final viscosity (cP)

The FV is the RVA Skim Milk Powder Index.