

## ABSTRACT

### An Investigation into the Cottage Scale Production of Cream Cheese from Soy bean (*Glycine max*)

Nalini N. Boodram

A high protein, low fat cream cheese was produced from the milk extracted from soybean (*Glycine max*). High quality, cleaned soybeans (2kg) were soaked in water three times their volume for 6 hours. Sodium bicarbonate (0.5%) was added to the soaked beans to aid in the slight removal of the beany off flavour, which is often imparted to the soy milk. The properly soaked-beans together with water (15L) were added to the Soya Cow SC20 System to produce slurry at 110°C at 15 psi for 2-3 minutes. The slurry was then filtered to extract the soy milk. Microbiological analysis revealed that mesophilic ( $20 \times 10^6$  cfu/ml) and thermophilic ( $14 \times 10^6$  cfu/ml) microorganisms were present. The soy milk contained protein (3.61%), fat (1.68%), SNF (4.62%) and ash (0.52%).

The methodology used to produce the soy cream cheese was similar to that used for the manufacture of cold-pack cream cheese. A commercial yoghurt culture (5%) was used as the inoculating agent. Preliminary trials produced a very dry and gritty curd. The addition of vegetable fat was used to give a more creamy, smooth appearance of the cream cheese and trials were conducted to determine the required amount. Refined soybean oil (1.5%) was finally used as the added fat. Free Fatty Acid Value (0.03%) and a Peroxide Value (0.10meq/kg). In addition to the fat, sucrose (1%) was also added. In the final formulation, the incubation time of 2 hours 15 minutes was used with an optimum incubation pH of 4.7.

The final soy cream cheese with fat (1.5%) had similar characteristics to commercial cow's milk cream cheese. Microbiological analysis of the soy cream cheese revealed the presence of mesophilic microorganisms ( $1.54 \times 10^3$  cfu/g), thermophilic microorganisms ( $1.57 \times 10^3$  cfu/g), yeasts, *Streptococcus* ( $1.50 \times 10^2$  cfu/g) and *Lactobacillus* ( $1.48 \times 10^2$  cfu/g). The soy cream cheese produced contained protein (11.68%), fat (7.60%), SNF (19.68%) and ash (1.45%).

The final soy cream cheese had an average depth of penetration of 13.2mm. The Minolta Colorimeter **L a b** results were 85.6, -0.4 and 15.2 respectively. Sensory evaluation trials conducted compared commercial cream cheese to unflavoured and flavoured soy cream cheese. The results indicated the need to improve the colour and the taste of the unflavoured soy cream cheese to attain similar characteristics as commercial cream cheese.

**Keywords:** soy beans, cream cheese, high protein.