

The wonderful variety of cheese

Cottage cheese is a popular low fat product and the third issue of the *International Journal of Dairy Technology* (Volume 69) features a review of methods to extend its shelf life. Good hygiene at every stage of manufacture and distribution is essential in avoiding spoilage, primarily due to growth of Gram-negative psychrotrophic bacteria, yeasts and moulds. Further extensions have been sought by use of food-grade chemicals, heat treatment and/or modified atmosphere packaging. The 17 articles covered a wide range of topics.

Other cheeses

Biogenic amines may be formed by the action of bacteria with decarboxylase activity breaking down amino acids released during the maturation of cheese. Screening six batches of traditionally produced Czech Akawi white brined cheese found one sample with higher than the tolerated maximum of 100 mg/kg of amines, with 33 contaminating species exhibiting decarboxylase activity.

Packaging has an important role in controlling oxidation, loss of volatile flavours and the microbiology of cheese, particularly after portioning. Trials with four and 12 month-old Italian Canestrato di Moliterno cheese (produced from 90 per cent ovine and 10 per cent caprine milks) indicated that a multilayer high-barrier film would delay mould growth and modified atmosphere could be superior to vacuum packaging for the mature cheese.

Kareish cheese is made in Egypt from low-fat or skimmed milks. It relies on acid coagulation using a yogurt-type



Chhana is a curd produced by heat and acid and may be used as a base for production of a spread using processed cheese technology. Photo courtesy of Biswarup Ganguly, via Wikimedia Commons

The third issue of *International Journal of Dairy Technology* (Volume 69) features methods to extend cheese shelf life and supplementation. Andrew Wilbey reports

starter. Addition of wheat bran to the soft cheese decreased the rheological characteristics, though up to 0.4 per cent addition was thought to be possible for a fibre enhanced product. Chhana is a curd produced by heat and acid and may be used as a base for production of a spread using processed cheese technology, in this case also incorporating maltodextrin.

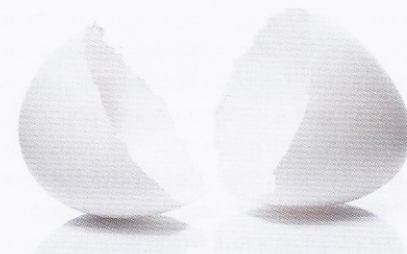
Rennet coagulation properties are critical to cheese making and whey proteins can interfere with coagulation in heat-treated milks. Whey protein depleted preparations were made, UHT treated and their coagulation properties assessed in terms of sodium chloride and micellar casein concentrations. The strongest gels were formed at 0.05 and 0.08M NaCl and between six and 6.6g/L.

Milk and beverages

A study of the effects of dietary rumen-protected lysine on milk yields and composition indicated that the lysine supplement increased milk and protein yields compared to the controls.

Examination of several commercial Brazilian chocolate milk beverages found a relationship between colour attributes and acceptability, while excessively strong aroma, flavour and the presence of sandiness would also reduce acceptability. A formulation for a sorghum-based breakfast smoothie was optimised, using milk plus 2.79 per cent germinated sorghum flour, 10.3 per cent sugar and 0.35 per cent pectin.

While milk is a good source of calcium, it is relatively poor in iron. Addition of iron microcapsules at 0.1 per cent to milk did not affect acceptability, while the pro-oxidant effect was not significant at up to 0.3 per cent with no effect on L values for colour. In some developing countries, further addition of calcium has been used, together with other micronutrients. A study of the addition of nanopowdered eggshell or oyster shell plus zinc supplementation in milk tablets suggested that this could be done without affecting the sensory qualities.



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Attempts are sometimes made to mask acid development in milk by neutralisation. A rapid enzyme-based assay for lactate was proposed, giving quantitative results up to 1000 mg/L of lactate.

Fermented milks

Replacement of part of the skim milk solids in yogurt by guar gum resulted in greater viscosity, but addition was limited to 0.6 per cent by acceptability. Replacement of milk fat by vegetable oils suggested an optimum fat content of 2 per cent and the superiority of sesame seed oil over canola oil.

Masske has 50 per cent milk fat and is made in Iran from fermented ewes' milk. Though *Streptococcus thermophilus* was the predominant species recovered from samples of masske, the traditionally made products also contained a wide range of contaminant organisms. An examination of Tibetan kefir resulted in the isolation of fifteen organisms, six of which produced exopolysaccharides (EPSs) with varying composition. Mannose, glucose and galactose were common components of the EPSs, sometimes with arabinose and/or rhamnose and xylose.

Ice cream

Ten samples of commercial US ice creams covering a milk fat range from four to 28 per cent were used in descriptive analysis and also in consumer acceptance tests. The major differences between the products were correlated with descriptors and those components that were associated with off-flavours were of great importance in the study. **DTI**