

Effect of edible coating and different packaging treatments on quality of paneer

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■ **ABSTRACT** : Paneer, popular with people in Indian subcontinent and with Indian diasporas scattered in several countries, has a shelf life of less than a day at ambient temperature. This investigation was carried out to study the effect of edible coating and different packaging treatments on shelf life improvement of paneer. Freshly prepared paneer was coated with composite edible coating, packed in packaging materials and stored under different storage conditions 5°C (T₁), 30°C (T₂) and ambient conditions (T₃). Uncoated (F₁) and Coated (F₂) samples were packed with vacuum in LDPE packaging material. When paneer samples were packed with vacuum, temperature had significant (P=0.05) effect on overall acceptability of the paneer while titratable acidity was significantly (P=0.05) affected by coating and temperature. Whereas, coating and temperature had significant effect (P=0.01) on TVC and Y&M counts. The effect of edible coating was found significant (P=0.01) on pH of the product when packed under vacuum. The coated samples packed in LDPE with vacuum had maximum shelf life of 56 days at 5±1°C. It is concluded from the present study that the edible coating and different packaging treatments had significant effect on shelf life of paneer.

■ **KEY WORDS** : Edible coating, Paneer, Quality, Vacuum packaging, Shelf-life

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Milk has played an important role in the socio-economic status of human beings since time immemorial. India has witnessed a remarkable growth in milk production during the last few decades due to the success of the Operation Flood programme, which is one of the world's largest and successful integrated dairy development programs initiated in 1970s. It has led India to emerge as the largest milk producer in the world, transcending a record level of 104.8 million metric tonnes (MMT) in 2008 accounting for 15 per cent of the world's total milk production (NDDDB, 2009; Bhasin, 2009). The production of paneer is now spreading throughout the world. Paneer is a rich source of animal protein available at a comparatively lower cost and forms an important source of animal protein for vegetarians. Over and above its high protein content and digestibility, the biological value of protein in paneer is in the range of 80 to 86 (Shrivastava and Goyal, 2007). In addition, paneer is a valuable source of fat, vitamins and minerals like calcium and phosphorus. It has a reasonably long shelf life under refrigeration. According to the PFA (2010), paneer means "product obtained from cow or buffalo milk or combination thereof, by precipitation with sour milk, lactic acid, or citric acid. It shall contain not more than 70 per cent moisture and

the fat content should not be less than 50 per cent expressed on dry matter". Milk solids may also be used in preparation of paneer. Bureau of Indian Standards (BIS, 1983) imposed maximum of 60 per cent moisture and minimum of 50 per cent fat in dry matter for paneer. The production of paneer has been largely confined to the unorganised dairy sector which employs traditional, inefficient methods of manufacture. Due to the ever growing demand for paneer, researchers were encouraged to develop new techniques for the manufacture of paneer.

Paneer is a highly perishable product. It was reported that the freshness of paneer remains intact only for 3 days at refrigeration temperature (Bhattacharya *et al.*, 1971). At room temperature paneer does not keep good for more than one day. In order to increase the shelf life of paneer, additives, modification in paneer manufacturing process, surface treatments and packaging materials have been recommended by various workers. Quality of paneer deteriorates due to the growth of organisms on the surface of paneer during storage (Sachdeva, 1983). The total counts as well as yeast and mould counts increased during storage of paneer up to 10 days at 5°C. Gupta *et al.* (1985) conducted sensory evaluation of paneer and revealed guidelines for good quality paneer, is