The Asian Journal of Animal Science (June to November, 2009), Vol. 4 Issue 1 : (6-9)

RESEARCH PAPER

Preparation of chhana whey beverage using mango pulp

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Accepted : February, 2009

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ABSTRACT

The chhana whey used in the preparation of mango beverage was obtained by coagulating cow milk with citric acid. The acidity of whey was kept constant at 0.70 % using citric acid for all 13 formulations. The maximum (8.5) flavour score was obtained to the product prepared from 5.0 % mango pulp and 7.5 % sugar. While minimum (6) score was obtained for the product prepared from 2.5 % mango pulp and 5.0 % sugar, which indicated the positive effect of higher levels of mango pulp and sugar. The significant ($p<0.01$) effect of mango pulp and sugar was also noticed on colour and appearance of the product. With increase in the level of mango pulp, the score increased up to certain limit. Where as, there was very negligible effect of sugar on colour and appearance score. Relating to consistency of the product, both the variables *i.e.* mango pulp and sugar showed significant ($p<0.01$) effect in linear as well as quadratic terms. As the level of both the variables increased the score also increased.

Key words : Whey beverage, Mango pulp and sensory evaluation

Whey a highly nutritious by-product obtained during the coagulation of milk by using acid and/or rennet or physico-chemical processes for the preparation of cheese, paneer, chhana, chakka and casein. In India, 80 per cent of the total whey produced is obtained from chhana or paneer production. Whey contains about half of the total solids of milk and is a source of precious nutrients like whey proteins, lactose, milk salts and water soluble vitamins (Sikder *et al*., 2002). Now, India has emerged as highest milk producing country in the world. During flush season surplus quantities of milk is diverted in the production of paneer, chhana, casein and shrikhand, thus producing enormous quantities of whey as by products. Out of 85 million tonnes of global production, 40 % is still disposed as raw whey into sewage, which leads to serious environmental pollution due to its high biological oxygen demand (Hofer, 1995). Therefore, the utilization of whey into fermented or non-fermented beverages is one of the most attractive avenues for the utilization of whey.

India has not only made great progress in milk production, but it has emerged as top fruit producer in the world (FAO,1995). However, a distressing aspect is that as much as 25 to 30 per cent of the total fruit produced in India get spoiled in the absence of infrastructure for appropriate post-harvest technology. Formulation of a new product using suitable combination of whey and fruit juices would permit economic utilization of whey and value addition to guarantee high income.

Hence, taking into account the market demands and consumer preference, conversion of whey into beverages is one of the most important avenues for utilization of whey in human food chain. Keeping in view the nutritional, biological and functional qualities of whey, attempt has been made to utilize the whey for the preparation of palatable refreshing beverage with addition of mango pulp

MATERIALS AND METHODS

A good quality fresh, cow milk was was standardized to of 4.0 per cent fat. The standardized milk was heated to boiling temperature with continuous stirring. Allowed cooling up to 80^0C and adding 2.0 % citric acid with constant stirring for equal distribution and stirred till coagulation took place. Then whey was strained through muslin cloth. The obtained whey was clear and greenish yellow in colour. The fresh whey obtained was adjusted to 0.70 % acidity by using citric acid. The optimum level of sugar was determined by adopting Response Surface Methodology (RSM) technique. Sugar was added as per the treatments and all 13 samples were pasteurized at 60^0C for 30 min to enhance their keeping quality and to facilitate the complete dissolution of sugar. Then inferred to stainless steel vessel and after pasteurization, samples were cooled to room temperature. The optimum level of mango pulp was also determined by adopting RSM technique. Pulp was added as per the treatments in all 13 samples and mixed thoroughly. The products were bottled in sterilized bottles and then cooled and stored in refrigerator at 5-7^0C.

Mango pulp and sugar are the important ingredients