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RESEARCH PAPER

Use of arrowroot (*Maranta arundinacea* L.) powder as a partial replacement of SNF in ice cream

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ABSTRACT

Replacement of milk solids not fat (SNF) with arrowroot powder at 15,30,45 and 60 % in soft serve ice-cream indicated that replacement at multiple level, increased the acidity and melt down duration values and decreased the protein content and over-run percentage values. It was observed that arrowroot powder could satisfactorily replace milk SNF up to 15% without impairing organoleptic qualities with reduction of 3.50% cost of production.

Key words : Arrowroot, *Maranta arundinacea*, Icecreem, Solid-not-fat

Ice cream is one such product which comes under frozen dairy products and is popular among all categories of people all over the world. The economic importance of the ice cream industry has been established. The value of ice cream as food is now realized and much scientific knowledge has been gained in the production and merchandising of ice cream.

Ice-cream is palatable and highly nutritious. An average a cup of good quality ice-cream (100 ml) supplies approximately 200 cals energy, 3.00 g protein, 0.31 g calcium, 0.104 g phosphorus, 0.14 mg iron, 5.48 IU vitamin A, 0.038 mg thiamine and 0.236 mg riboflavin. Hence, it is distinct that ice-cream contributes high food value in an attractive and appealing form and hence universally liked.

Thamburaj and Singh (2001) described that the bulk material of arrowroot is used for the production of starch soon after harvest. Later, the starch content declines and sugar content is increased. The fresh rhizomes of arrowroot contain moisture 63.4 per cent, starch 27.8 per cent, fibre 3.0 per cent, dextrin and sugar 2.1 per cent, crude protein 1.6 per cent, ash 0.9 per cent and fat 0.2 per cent. The rhizomes are eaten as boiled or roasted and made into pastries.

Scope exists for the reduction cost of ice-cream preparation through substation of solids-not-fat of milk with the low cost arrowroot powder. In this investigation, the replacement of milk SNF with arrowroot powder of the chemical sensory characteristics of ice-cream mix and organoleptic attributes of ice-cream was investigated..

Arbuckle (1972) described special ice-cream containing sweet potato starch. Ash and Colney (1977) reported that starch can be safely used in frozen food product as a substitute skim milk powder.

MATERIALS AND METHODS

The present investigation on preparation of ice cream with arrowroot powder was carried out at the Department of Animal Husbandry and Dairy Science, College of Agriculture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist. Ratnagiri (Maharashtra) during 2005-06.

Fresh cow milk and cream were procured from the Dairy unit of the College of Agriculture, Dapoli as and when required. The arrowroot tubers were obtained from the Central Experiment Station, Wakawali of Dr. B.S.Konkan Krishi Vidyapeeth, Dapoli Sugar, stabilizer (gelatin) and skim milk powder were purchased from the local market.

Five types of ice-cream mixes of 2kg capacity each in five replicates where formulated with proportionate replacement of milk SNF with arrowroot powder levels of 15,30,45 and 60 per cent giving due moisture allowances for arrowroot powder (T_1,T_2,T_3 and T_4 by keeping one type of mix as control (C) which did not contain any arrowroot solid. All the five mixes were prepared to contain an identical composition of 10 per cent fat,11 per cent SNF,16 per cent sugar ,0.5 per cent. Stabilizer in control mix in 15,30,45 and 60 per cent distributed mixes contained 0.5 per cent stabilizer in each