Process optimization for preparation of soy ice-cream

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ABSTRACT : With the current upward trend in nutritional and health awareness, the consumer demand is for high nutritive valuable product in the market with acceptable sensory characteristics. The present study was undertaken with different levels (10%,20% & 30%) of soymilk used in ice cream preparation. Different samples of soy ice cream treatments and control were analyzed for fat, lactic acid, total solids, protein, ash and organoleptic characteristics (flavour and taste, body and texture, colour and appearance, overall acceptability). The data obtained on various parameters were statistically analyzed. It was observed that the soy ice cream prepared with 20 per cent (T_2) soymilk was highly acceptable in terms of flavour and taste, texture and overall acceptability as compared to the other experimental treatment combinations.

KEY WORDS : Process optimization, Soymilk, Ice cream

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INTRODUCTION

Ice-cream is a popular frozen dessert for all people throughout the world. Soymilk is a beverage made from soybeans which could be used as an alternate choice for making ice cream because it is normally used as a substitute for dairy milk and soybean also a source of bioactive molecules. It contains high amount of proteins, polysaccharides and indigestible fibre, unsaturated fat and lecithin, vitamins and minerals, as well as bioactive organic molecules. This approach will give relatively cheaper and nutritious product which can find popularity in common market. Isoflavones in soymilk may have health benefits including reduction of cholesterol, easing of menopause symptoms, prevention of osteoporosis and reduction of risks for certain cancers. This will also provide avenues for utilization of soymilk to produce high quality protein rich foods. The present investigation was planed with a view to optimize the process of manufacturing of soymilk ice cream following the process of Bhandari (2001).

MATERIALS AND METHODS

First of all calculated amount of soymilk was added into calculated amount of milk and cream as per calculation for T_1

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(10%), T_2 (20%), T_3 (30%) and heated to 50^0C. Then calculated amount of dry ingredients like skim milk powder, stabilizer and emulsifier were mixed and added to liquid ingredients and thoroughly stirred with the help of wooden ladle. Then ice cream mix was homogenized at 150 kg/cm^2 in first stage and 50 kg/cm^2 in 2nd stage at 60-62^{0}C using Nonton Gaulin two stage homogenizer. Mix was then pasteurized at 68.3^{0}C for 30 minutes by batch method and cooled at 5^{0}C and held for 4-6 hours. Finally the mix was frozen and hardened at -18^{0}C. The samples were analyzed for physiochemical, microbial and organoleptic qualities as per the procedure laid down by BIS (1964), ICAR manual in Dairy Chemistry (1972) and Microbiology(1972).

RESULTS AND DISCUSSION

The data collected on different aspects as per plan were tabulated and statistically analyzed as per Chandel (1991), Table -1 showed average data obtained on different parameters.

Physiochemical properties:

The highest mean for fat content in soymilk ice cream was found in T_3=10.80, followed by T_2(10.60), T_1 (10.40) and T_0 (10.20). The treatments did not differ significantly. The highest mean for total solids content was found in T_0=37.39, followed by T_1(37.04), T_2(37.01) and T_3 (36.92).

The treatments did not differ significantly. The highest mean for protein content was found in T_0=3.82, followed by T_1(3.79), T_2(3.78), and T_3 (3.77). The treatments did not differ