

## **Development of rice based frozen desserts (rice ice-cream)**

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Ice cream is a frozen dessert usually made from dairy product, such as milk and cream, and often combined with sugars, emulsifiers, colours, and flavors. Soy ice cream, made from soy milk is the only alternative non-dairy frozen dessert available in Sri Lanka and it is the most popular alternative frozen dessert available for the people who are lactose intolerant or who do not eat dairy for other reasons. Since rice is the staple food of Sri Lankans and as the major food grain with high nutritive value, this study was carried out to develop rice based frozen desserts (ice cream) with two different nutritional and sensory characteristics as rich formula (type I) and low sugar, low fat, fibre rich formula (type II).

Studies were carried out to evaluate the effect of total solid content of rice milk (4 %, 6 %, 8%, and 10 %), type of oil/fat (Coconut oil, sunflower oil and butter) and their level (4 %, and 6 %) on the quality of rich formula while keeping other ingredients (sugar glucose syrup, lecithin, milk flavor, vanilla flavor, colouring ) constant. The best formulation was selected based on organoleptic properties. The type II ice cream mix composition was formulated based on selected rich formula. The sweetness of type II was adjusted same as type I by replacing part of sucrose with noncalory sweetner, sorbitol powder so as to give the same sweet intensity. While keeping the other ingredients constant, the level of rice bran (0.2 %, 0.4 %, and 0.6%) was varied. The processing procedure was same as rich formula and the most appropriate rice bran incorporation level was selected considering the organoleptic properties. The nutritive value, microbiological quality and other quality requirements as total solid, fat (%), mass (g/l) were also determined. The nutritional and physicochemical properties of the fomuulated two types of ice cream were also compaired with the commercialiy available soya and milk ice cream. The balanced complete block design was

used to evaluate the sensory effects and completely randomized design (CRD) was used to evaluate the other physicochemical parameters.

The total solid content of rice milk was significantly affected to the organoleptic properties. The formula with rice milk of 6 % total solid content gave the most satisfactory results. The type and level of the fat/oil were not affected to the sensory properties as colour, creaminess, and melting quality except the flavour and overall acceptability. The samples with butter got the highest sum of ranks compared to others. However the samples with 6% fat /oil level gave oily mouth feel compared to the 4 % level. Considering all these facts 4 % butter was selected for the type I formulation. The fat level was cut down by half and as a fiber source rice bran was incorporated. According to the sensory results the rice bran content was highly affected to the taste and overall acceptability. The samples with the bran level more than 0.2 % gave characteristics bitter taste of rice bran. Therefore 0.2 % of rice bran incorporation level was selected for the formula. Incorporation of cocoa powder was significantly affected to mask the undesirable flavours and colour due to the rice bran.

Results revealed that it is possible to produce highly acceptable soft ice cream with different nutritional and sensory characteristics using rice as the major ingredient

Evaluation of physical, chemical, eating and cooking qualities of recently recommended and traditional rice varieties in Sri Lanka