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Research Paper :

Utilization of dairy waste for development of orange flavoured whey beverage

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ABSTRACT

The present study was undertaken with the objectives of developing suitable combination of whey, orange juice and sugar for the preparation of orange flavoured whey beverage and ascertain their nutritional qualities. The orange juice and whey were used in the ratio of 1:1 (T_1, T_2, T_3), 1:2 (T_4, T_5, T_6) and 3:1 (T_7, T_8, T_9) with three different sugar levels *i.e.* 8%, 10% and 12%. The analysis of nutritional (carbohydrate, protein, fat and ash) were done by using the methods laid down in AOAC. The maximum calories and total carbohydrates per cent was obtained in T_9. Treatment T_1 showed maximum per cent of protein and fat. While the highest average ash per cent was in T_8. Hence, treatment T_1 was the best treatment in terms of protein and fat. Thus, orange flavoured whey beverage prepared has higher content of carbohydrate, protein and lower fat and can be useful for the people suffering from ailments such as degenerative diseases, cardio-vascular diseases, pregnancy, lactation, obesity etc.

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Key words : Whey, Orange juice, Orange Flavoured whey, Beverage, Nutrients

Whey is a highly nutritious by-product of paneer, cheese, chhana and casein industries. It contains about 50 per cent of the milk solids, 6-7 per cent dry matter which account for 45-50 per cent of all the milk constituents, casein, fat soluble vitamins. Whey contains 70 per cent of sugar lactose, 10-29 per cent of milk proteins, good source of minerals like calcium, phosphorus, magnesium etc. and almost all essential amino acids (Rani *et al.*, 2007).Whey is nutritious for people of all ages. Thus, it can be regarded as the natural supplement to have a healthy life free of deficiency diseases which may be either due to lack of essential amino acids or B-complex vitamins and minerals. It is a boon to those who suffer from obesity, cardiovascular diseases and health conscious consumers (Tomer and Prasad, 2002).Whey is excellent beverage base as it is a genuine thirst quencher. Whey drinks are light, refreshing, healthful and nutritious. They also offer good profit margin (Gupta and Prasad, 2000). Oranges are good source of vitamin (A, E, B_6) and minerals (magnesium, iron, potassium). Orange juice being favourite of consumers as a soft drink can be incorporated in whey to develop the beverages, which also enhances the nutritional as well as overall acceptability of the product (Prasad, 2004). Thus, the present study was undertaken to develop orange flavoured whey beverage with suitable combinations and ascertain their nutritional composition.

EXPERIMENTAL PROCEDURE

Milk, oranges, sugar, colour and essence were procured from the local market of Allahabad. Whey was procured by the preparation of paneer by the researcher itself. Orange juice was procured by squeezing and straining properly. Nutritional analyses of orange flavoured whey beverage were done by standardized procedure laid down in AOAC (1980). Total carbohydrate was estimated by subtracting the sum of percentage of protein, fat and ash. Carbohydrate = 100 (protein + fat + ash), formula given in ISI methods of test Dairy Industry. Protein was estimated by the Kjeldhal Method. Fat was estimated by Gerber methods, ash percentage was determined according to the methods described in AOAC. Calories were calculated by using the nutritive values given by Gopalan (2001). Whey was procured from the Dairy Department. In this, orange juice was added in the ratio 1:1, 1:2, 1:3. Then, the sugar was added in different per cent value *i.e.* 8%, 10% and 12%. After this, it was heated at 85^{0}C and hold for five minutes. Then it was cooled at 10^{0}C for ten minutes and the product was ready to serve.

Treatments and replications:

No. of treatments = 9, No. of replications = 4