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Development and quality evaluation of wheat milk halwa using honey

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Abstract

Halwa occupies an important place among traditional Indian sweet dish. Wheat is an important staple crop with good source of protein, vitamin, dietary fibers also good source of minerals like selenium and magnesium, nutrients essential to good health. Honey is common sweetener, a powerful medicinal tool made up of carbohydrate and water. It contains mineral, vitamin blend of flavonoids and phenolic acid. Honey is used with wheat milk to increase its nutritional value. This study was made to develop wheat milk halwa with different level of honey concentration. The basic aim of this study was process optimization for production of wheat milk halwa with honey. Treatment T₁ standardized to 10% honey in 90 % of wheat milk, T₂ standardized to 20% honey in 80 % of wheat milk, T₃ standardized to 30% honey in 70 % of wheat milk, T₄ standardized to 40% honey in 60 % of wheat milk. Physio –chemical analysis protein percentage, fat, total solids, moisture, ash, was done for estimating its nutritional content and safety and organoleptic characteristics like (flavor and taste, body and texture, color and appearance, overall acceptability) by trained panelist using 9 point hedonic scale. According to the analysis, treatment T₄ with 40% honey was found to the best among the four. Thus product acceptability judged by organoleptic evaluation and therapeutic value, the treatment can be rated as T₄> T₃> T₂>T₁.

Keywords: Development, quality evaluation, wheat milk halwa, honey

1. Introduction

Wheat is the most important staple food crop for more than one third of the world population and contributes more calories and proteins to the world diet than any other cereal crops [1, 2]. It is nutritious, easy to store and transport and can be processed into various types of food. Wheat is considered a good source of protein, minerals, B-group vitamins and dietary fiber [3, 4] although the environmental conditions can affect nutritional composition of wheat grains with its essential coating of bran, vitamins and minerals; it is an excellent health-building food. Wheat is also used as animal feed, for ethanol production, brewing of wheat beer, wheat based raw material for cosmetics, wheat protein in meat substitutes and to make wheat straw composites. Wheat germ and wheat bran can be a good source of dietary fiber helping in the prevention and treatment of some digestive disorders [4].

Wheat provides nearly 55% of carbohydrate and 20% of the food calories. It contains carbohydrate 78.10%, protein 14.70%, fat 2.10%, minerals 2.10% and considerable proportions of vitamins (thiamine and vitamin-B) and minerals (zinc, iron). Wheat is also a good source of traces minerals like selenium and magnesium, nutrients essential to good health [5, 6, 7]. Wheat grains are also rich in pantothenic acid, riboflavin and some minerals, sugars etc. The wheat, as produced by nature, contains several medicinal virtues. The whole wheat, which includes bran and wheat germ, therefore, provides protection against diseases such as constipation, ischemic, and heart disease, disease of the colon called diverticulum, appendicitis, obesity and diabetes [8].

Halwa is Indian sweet which can be considered as a pudding, made by using different types of flour (depending upon the taste of people). The word halwa entered in the English between 1840 and 1850. In Iran, Turkey, Somalia, India, Pakistan and Afghanistan the dish is very popular. In India different versions of it are also found which are distinguished by the region and the ingredients from which they are prepared. Most types of halwa are relatively dense confections sweetened with sugar or honey.

Honey has been a common sweetener for foods and a powerful medicinal tool for centuries. Honey is primarily made of water and carbohydrates. It also contains trace amounts of several minerals and vitamins. We can find niacin, calcium, copper, riboflavin, iron, magnesium, potassium and zinc in honey. Honey also contains a blend of flavonoids and phenolic acids. These are antioxidants that eliminate potentially destructive free radicals in the human body. Honey is most commonly used as a topical antibacterial agent to treat infections in a wide range of wound types [9, 10, 11, 12]. These include: Leg ulcers, Pressure ulcers, Diabetic foot

ulcers, infected wound resulting from injury or surgery. There are many health benefits of honey fight acne, combat infection, treat burns, reduce cholesterol, recede arthritis pain, aide digestion, fight fatigue, strengthen immune system.

2. Materials and Methods

2.1 Raw materials – The basic ingredients such as wheat, honey, ghee, skim milk powder were procured from local market of Allahabad.

2.2 Preparation of wheat milk- Clean wheat was soaked overnight and strained through metal strainer and hanged in muslin clothes to germinate. The germinated wheat was grinded with help of water in ratio 1:4. The wheat milk obtained was strained through strainer and bran was removed and milk was collected in bowl.

2.3 Preparation of wheat milk halwa- Different treatments was weighed separately along with 20% ghee and 10% skim milk powder. Required amount of ghee was added to pan and heated to which wheat milk was added along with skim milk powder and mixed properly. The mixture was stirred gently until thick consistency was obtained. Honey was added to mixture and cooked until color changed to brown. Cardamom was added at end.

2.4 Sensory evaluation- Sensory characteristics of halwa were evaluated by panel of judges on 9 point hedonic scale¹³.

2.5 Analysis- Moisture, protein, fat, total solid were done using AOAC methods¹³. Microbial profile of wheat milk halwa was determined by method described by APHA¹⁴.

3. Result and Discussion

3.1 Result

Sensory, chemical and microbial results are listed in table. It is evident from table that highest sensory score (flavor and taste, color and appearance, body and texture) was given to T₄ and lowest to T₁. It is also observed from table that significant differences were observed between different treatments. As the percentage of wheat milk was reduced total solid %, fat %, protein % decreased and vice versa in acidity and ash. Acidity was highest in T₄ and increased significantly as honey was increased. Yield of sample increased from T₁ –T₄. Yeast and mould increased with increasing moisture content of sample. Coli form was found negative. Cost of production was also highest for T₄ followed by T₃, T₂ and T₁.

Table: Average data obtained on different parameters of wheat milk halwa.

Parameters	T ₁	T ₂	T ₃	T ₄
Moisture%	13.00	18.70	22.82	30.24
Fat%	15.12	14.85	14.40	14.10
Protein%	12.71	11.30	10.28	8.31
Ash%	2.36	4.22	5.41	6.44
Total solids%	86.41	81.07	76.95	69.18
Acidity%	0.46	0.64	0.72	0.81
Color & appearance	7.50	7.54	8.16	8.38
Body & texture	7.06	7.72	7.30	7.37
Flavor & taste	7.42	7.35	7.70	7.94
Overall acceptability	7.30	7.46	7.74	8.22
Coli form	Nil	Nil	Nil	Nil
Yeast & mould	2.60	4.20	5.40	6.80
Yields%	49.57	55.55	63.53	70.67
Cost (Rs/Kg)	171.96	207.96	243.96	279.96

3.2 Discussion

In this study the different treatment of halwa was prepared by mixing honey in different ratio. The treatment T₁ containing 90% wheat milk and 10% honey showed poor sensory attributes, its taste was not liked by panel of judges. Some variations were also shown in chemical and microbial content of different treatments. Moisture varied from T₁ -T₄. This may be due to moisture retention in halwa due to honey as it has moisture holding tendency. Fat, protein and total solids decreased due moisture content. The yield values were highest for T₄ this was due to high moisture content in the sample. Yeast and mould were also highest in T₄; this was also due to high moisture content in sample. The manufacturing cost increased marginally with increasing concentration of honey.

4. Conclusion

It can be concluded that better nutritional quality halwa can be easily prepared using honey and wheat milk and acceptance of product is marvelous. Among all the four treatment the wheat milk halwa containing 40% of honey was highly accepted. Treatment containing 10% honey was not accepted due to flavor and taste. Further the product containing 40% of honey was highly acceptable because of flavor and appearance.

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