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Studies on cost of production for value added cottage cheese with different levels of chick pea milk and Turmeric powder

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Abstract

A study was undertaken with the objective of estimating the cost of production of cottage cheese prepared by chick pea milk. A total of 17 combinations of skim milk, chick pea milk & turmeric powder were prepared in five replication including one as a control and remaining sixteen as experimental. All the standard ingredient were purchased from local market. The result of the study revealed that the production of cost of controlled cottage cheese was lower Rs. (262.16/kg) compared to chick pea milk cottage cheese Rs. (325.42 /kg.), which may be attributed to higher nutrient content of chick pea milk cottage cheese.

Keywords: Cottage cheese, skim milk, chick pea milk, cost of production

1. Introduction

Cottage cheese is a product obtained from skim milk by rennet coagulation and subsequent draining of whey. The process of draining allows the whey to remain in the product which is high in protein content cottage cheese is generally white in color. It does not undergo aging and washed several time to give it different taste of sweet and mildly flavor. According to the ideal standards for cultured dairy products, the standard creamed cottage cheese (full fat) flavor should be fresh, pleasant, and clean, with slight acidity and mild diacetyl flavor with no bitterness after taste. Ideal cottage cheese curds should be uniform, and with a meaty texture without being too firm, rubbery, or tough (Bodyfelt and Potter, 2009).

The cheese market in India, including its variants like processed cheese, cheese spread, mozzarella, flavored and spices cheese is valued at around Rs.180 crores (chandan,2006). The share of processed cheese in the overall market is 60 percent(chandan,2006). Its market is growing at about 15 percent annually. Cheese spread has a share of around 30 percent in the total processed cheese market (chandan, 2006). In addition to the domestic production, another 1,000 tones is important, which largely includes specialized cheese varieties (chandan 2006).

The chickpea (*Cicer arietinum*) is a legume of the family Fabaceae. Chickpeas are grown in the Mediterranean, western Asia, Indian subcontinent and Australia. Chickpeas are large roundish legumes, which look rather like a large round pea with an interesting bumpy surface. Chickpeas are well-known for their delicious nut like taste and are high in protein content. Also known as garbanzo, chickpeas are highly nutritious. Their nutritional quality makes chickpeas famous Indian and Middle Eastern dish. Chickpeas are one of the healthiest food sources of dietary fiber. They provide carbohydrates for people sensitive to insulin and those suffering from diabetes. Chickpeas are low in fat content and contain both the soluble and insoluble fiber, which helps in reducing both total and LDL cholesterol. Chickpeas are rich in folate and protein content. Folate is a soluble B vitamin, which is present naturally in food items and reduces the risk of colorectal cancer in people.

2. Material and Methods

The experimental work was carried out in the research laboratory of department of Dairy, Technology, Warner school of Food and Dairy Technology, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad. Skim milk, chick pea and spices (turmeric, black pepper) were obtained from the local market of Allahabad city. Cottage cheese prepared by skim milk and different levels of chick pea milk with turmeric powder. There was total seventeen combination. Each was prepared in five replications. The different treatment combinations used in the experimental are as follows:

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- T₀ = Cottage cheese prepared from skim milk.
- T₁= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 20%CPM and 0.5% T.P
- T₂= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 20%CPM and 1 % T.P
- T₃= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 20%CPM and 1.5% T.P
- T₄= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 20%CPM and 0.5% T.P
- T₅= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 30%CPM and 0.5% T.P
- T₆= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 30%CPM and 1% T.P
- T₇= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 30%CPM and 1.5% T.P
- T₈= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 30%CPM and 2% T.P
- T₉= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 40%CPM and 0.5% T.P
- T₁₀= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 40%CPM and 1% T.P
- T₁₁= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 40%CPM and 1.5% T.P
- T₁₂= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 40%CPM and 2% T.P
- T₁₃= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 50%CPM and 0.5% T.P
- T₁₄= Cottage cheese prepared from Skim milk (0.5% fat&

- 8.7% S.N.F) with addition of 50%CPM and 1% T.P
- T₁₅= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 50%CPM and 1.5% T.P
- T₁₆= Cottage cheese prepared from Skim milk (0.5% fat& 8.7% S.N.F) with addition of 50%CPM and 2% T.P

2.1 (CPM =Chick milk pea, TP = Turmeric Powder)

For the preparation of control cottage cheese, standardized skim milk (0.5%fat, 8.7%S.N.F) was added with added 20 percent cream.For the preparation of experimental cottage cheese, skim milk +chick pea milk + turmeric powder mixed then heated. After that Starter culter was added. And Cacl₂ & with the help of rennet, milk was converted into curd. Coagulum was cut into small cube size it was drain and washed for three times added salt & cream (20%) was added then the cottage cheese was kept in refrigerator until used.

The cost of prepared product was calculated at the prevailing prices of raw materials purchased from the local market of Allahabad. The data was analyzed statistically by using mean score.

3. Result and Discussion

The costs of the ingredients are very important factor besides other factors in determining the cost of production. It is considered as basis for price fixation and determines the profit. The price of the product is depend on the cost of the production. The cost of experimental cottage cheese was calculated, which is shown in the table below.

Table 1: Cost of production for Cottage Cheese Prepared by Skim milk, Chick pea milk & Turmeric Powder.

Treatment	Skim milk Rs/ml.	Chick pea milk Rs/ml.	Cream Rs/gm.	Turmeric powder Rs/gm.	Black pepper Rs/gm.	Over head exp. Rs/gm.	Yield of cottage cheese in gm	Total Cost of cottage cheese Rs./ kg
T ₀	5045/201.8		100.9/40.36			20	198.2	262.16
T ₁	4036/161.44	1009/100.9	100.9/40.36	5.045/0.90	2.02/1.81	20	198	325.42
T ₂	3980/159.2	995.0/99.5	99.50/39.8	9.95/1.791	1.99/1.79	20	201	322.08
T ₃	3962.3/158	990.5/99.05	99.05/39.62	14.85/2.67	1.98/1.78	20	201.9	321.12
T ₄	3927/157.0	981.8/98.18	98.18/39.27	19.6/3.54	1.96/1.76	20	203.7	319.75
T ₅	3320.6/132.8	1423.1/142.32	132.8/53.12	4.74/0.85	1.89/1.70	20	210.8	350.77
T ₆	3309.6/132.3	1418.4/141.84	132.3/52.92	9.45/1.701	1.89/1.70	20	211.5	350.46
T ₇	3301.8/132.0	1415.0/141.5	132.0/52.8	14.15/2.54	1.88/1.69	20	212	350.53
T ₈	3297.2/131.8	1413.0/141.3	131.8/52.72	18.8/3.38	1.88/1.69	20	212.3	350.89
T ₉	2712/108.48	1808.3/180.83	131.1/52.44	4.5/0.81	1.8/1.62	20	221.2	364.17
T ₁₀	2729.7/109.18	1819.8/181.9	131.9/52.76	9.0/1.62	1.8/1.62	20	219.8	367.08
T ₁₁	2727.2/109.0	1818.1/181.8	131.8/52.72	13.6/2.448	1.8/1.62	20	220	376.58
T ₁₂	2712.4/108.4	1808.3/180.83	131.1/52.44	18.0/3.24	1.8/1.62	20	221.2	366.53
T ₁₃	2162/86.48	2162/216.2	129.7/51.88	4.3/0.77	1.7/1.53	20	231.2	376.86
T ₁₄	2174.8/86.99	2174.8/217.48	130.4/52.16	8.69/1.56	1.73/1.53	20	292	379.72
T ₁₅	2162/86.48	2162/216.2	129.7/51.88	12.9/2.32	1.7/1.53	20	231.2	378.4
T ₁₆	2155/86.2	2155/215.5	129.3/51.72	17.24/3.10	1.7/1.53	20	232	378.05

Production cost of control cottage cheese was found Rs.262.16, whereas the experimental cottage cheese was started at Rs.325.42. The production cost ranged depending upon the price of the ingredients in experimental cottage cheese. It can also be observed that the highest mean cost (Rs.)was recorded in cottage cheese prepared by skim milk and chick pea milk & different level of the turmeric powder in sample of T₁₄Rs (379.72) followed by T₁₆Rs (378.05),T₁₅ Rs (378.4),T₁₃ Rs (376.86), T₁₁Rs (376.58), T₁₀Rs (367.08), T₁₂Rs (366.53), T₉ Rs (364.17), T₈Rs (350.89) T₅Rs (350.77),T₇ Rs (350.53), T₆Rs (350.46), T₁Rs (325.42), T₂Rs (322.08), T₃Rs (321.12), T₄Rs (319.75), T₀ Rs (262.16).

4. Conclusion

It can be concluded from the above study that skim milk and chick pea milk added cottage cheese was rich source of protein and a good source of mussels building. The cost of production is not very high compared to controlled cottage cheese prepared by skim milk and cream.So; it should be promoted for further production keeping in view of its nutritional and therapeutic use.

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