

Development of Vitamin a Rich Low Fat Cottage Cheese Using Carrot Pulp

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Abstract

The study comprised of developing Vitamin A rich low fat cottage cheese using carrot pulp with different concentrations of carrot pulp used 3%, 6%, 9%, 12% and 15% coded as T1, T2, T3, T4, and T5 respectively, then these cottage cheese were sensory evaluated by a panel of 5 members drawn from the faculty of college. The code "T3" i.e. 9% was found to be the most acceptable after scoring in a 9-point hedonic scale with an average of 39.25 and standard deviation of 0.5. The t test was applied in which the score was taken into consideration and a comparative study was made between the low fat cottage cheese and the experimental cottage cheese prepared. Next the nutritional analysis of the cottage cheese was done and it was observed that it contains moisture about 66.57%, ash 2.63%, fat 0.29%, protein 8.05%, calcium 216.6mg, vitamin A 375.8mcg, carbohydrate 6.8g, mineral (%) 2.63%. A presumptive coliform test was done which was found to be absent.

Keywords: vitamin A fortification, low fat cottage cheese, carrot and milk products.

1. Introduction

Cottage cheese is a cheese curd product with a mild flavour, it is the most common type of cheese used in traditional South Asian cuisines. One serving of cottage cheese contains approximately 116 calories, 3g of total carbohydrates, 3.2 g fat. Cottage cheese is a good source of vitamins, including Vitamin A.

Vitamin A is fat soluble and hence gets removed during the production of lower fat milk products. Herein comes the role of fortification, a process of adding micronutrients such as vitamins and minerals to the food to prevent common deficiencies and diseases caused by the absence of these nutrients.

Carrots are exceptionally rich source of carotene and vitamin A. 100g of fresh carrot contains 8285 mcg of beta-carotene and 16706 IU of vitamin A. Carrots also contain valuable amounts of antioxidant nutrients, the most powerful being beta-carotene. Carrots prevent cancer and heart disease, improve vision and have got anti-ageing properties. Being rich in dietary fibre they also improve gastro-intestinal health. Hence the fortification of cottage cheese with carrots can not only improve its nutritional value, but can also play an important role in improving health and preventing deficiency diseases.

The objectives of this research project are:

1. Development and optimization of low fat Cottage cheese with carrot pulp.
2. To evaluate the organoleptic quality of low fat Cottage cheese with carrot pulp.
3. To assess the nutritional quality of low fat Cottage cheese with carrot pulp.

2. Study Design

The work was done in phases which included development of cottage cheese, its sensory and nutritional analysis and the data analysis and interpretation of results. The sensory evaluation was done according to the 9 point Hedonic scale, and the data was analysed using the Chi-square test.

Low fat cottage cheese was developed from skimmed milk and to it was added carrot pulp to enrich the cheese with vitamin A.

2.1 Treatments:

- T1- Low fat Cottage cheese using 3% carrot pulp.
- T2- Low fat Cottage cheese using 6% carrot pulp.
- T3- Low fat Cottage cheese using 9% carrot pulp.
- T4- Low fat Cottage cheese using 12% carrot pulp.
- T5- Low fat Cottage cheese using 15% carrot pulp.

Nutritional analysis of the prepared cottage cheese was done at the RFRAC centre (Regional Food Research Analysis Centre) Lucknow.

3. Result and Discussion

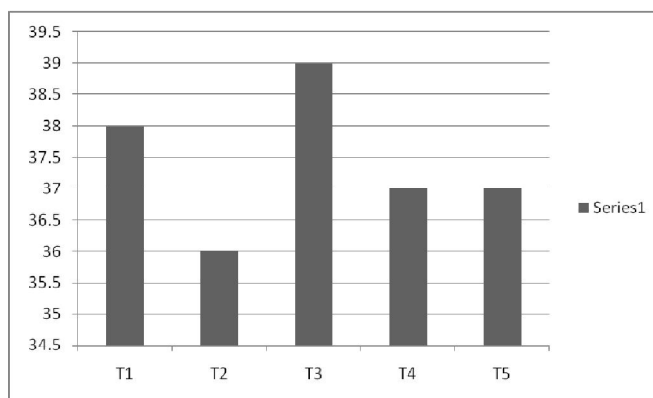
The experimental cottage cheese were sensory evaluated by a panel of five members on a 9-point hedonic scale and marking was done on the basis of four parameters-

- Body and Texture
- Colour and Appearance
- Flavour and Taste
- Overall Acceptability

The total average and standard deviation of individual product was calculated and the best of the five products was for further put forth for the nest phase.

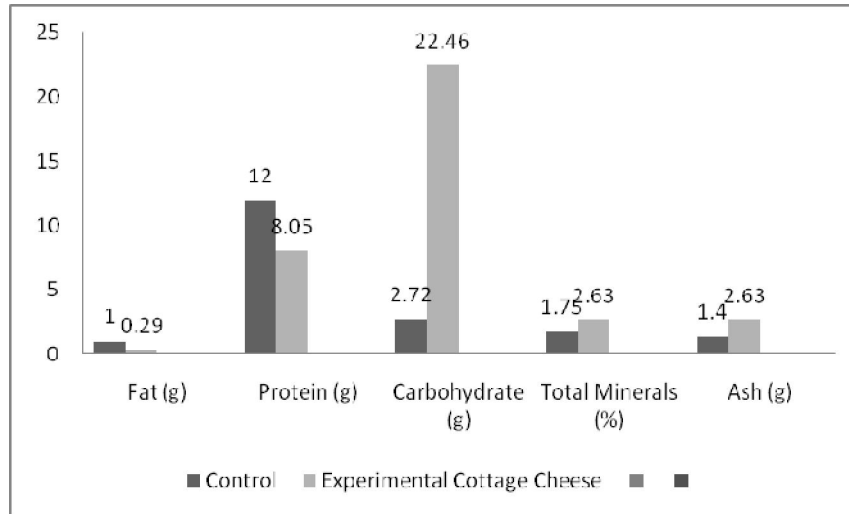
3.1 Overall Acceptability

	T1	T2	T3	T4	T5
Member 1	7	7	8	6	6
Member 2	8	7	8	7	7
Member 3	7	6	8	9	9
Member 4	8	8	7	7	7
Member 5	8	8	8	8	8
Avg Marks	38	36	39	37	37



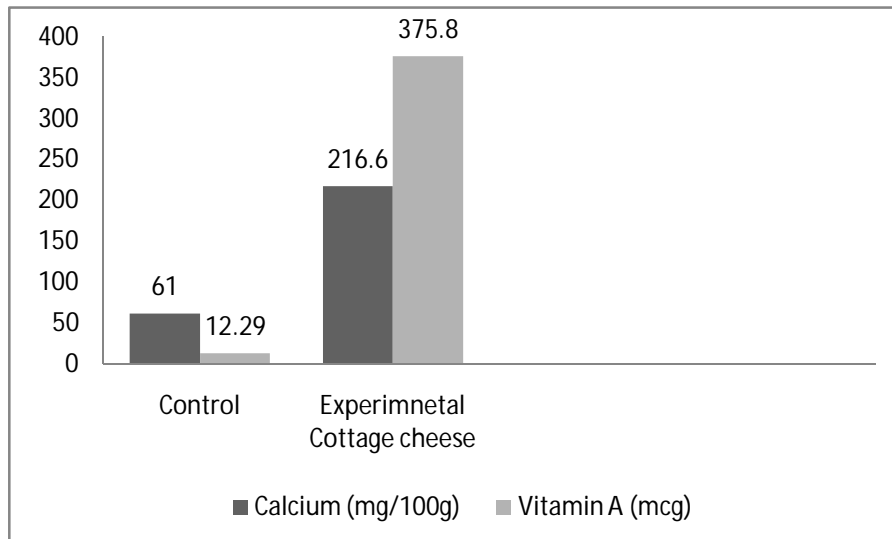
3.2 Nutrient contents in control and experimental cottage cheese

Parameters	Control	Experimental Cottage Cheese
Fat (g)	1	0.29
Protein (g)	12	8.05
Carbohydrate (g)	2.72	22.46
Total minerals (%)	1.75	2.63
Ash (g)	1.4	2.63



3.3 Nutrient contents in control and experimental cottage cheese

Parameters	Control	Experimental Cottage Cheese
Calcium (mg/100g)	61	216.6
Vitamin A (mcg)	12.29	375.8



4. Conclusion

Low fat cottage cheese contains negligible amount of vitamin A, but it was observed that cheese fortified with carrot pulp showed a significant increase in the value of

vitamin A providing atleast 25% of RDA per serving, as a study conducted by **Marker, 2002** reported that carrots are an excellent source of vitamin A which keeps cell membrane healthy, making them stronger against disease causing microorganism. Further, a significant change was also observed in the calcium level from 61mg in regular cottage cheese to 216.6mg in fortified cottage cheese. The level of carbohydrate content also showed increase from 2.72g- 22.46g/100g in the fortified cheese. So fortified cottage cheese can be used as a substitute for regular cottage cheese because of it's high nutritional content.

Reference

- [1] **Marker P. (2002).** Colon cancer prevention, *Encyclopedia of Dairy Science*, 3 (2):101-130.

