A COMPARATIVE STUDY ON YEILD AND NUTROCHEMICAL ATTRIBUTES ON EXTRACTION OF PANEER FROM 5 DIFFERENT BOVINE MILK SAMPLES

B. LIKITA SRI[1] T. GAYATRI[2]

[1]MSC Student, Department of M.SC HOME SCIENCE, St. Joseph's College for Women (Autonomous), Visakhapatnam, AP, 530004

[2]Assistant professor, Department of M.SC HOME SCIENCE, St. Joseph's College for Women (Autonomous), Visakhapatnam, AP, 530004

Abstract *Milk is a white aqueous solution and an emulsion or colloid of butterfat globules within a water-based fluid that contains dissolved carbohydrates and protein aggregates with minerals It is produced as a food source for the young providing energy, biosynthesis of non-essential amino acids, essential fatty acids, vitamins and trace elements, and water. Paneer is a direct acid and heat coagulated cheese procured from milkusing coagulating agent to it. Paneer is a common ingredient used in Indian cooking especially in North India.In India, 1% of the total milk production is converted into paneer and the annual production is estimated 150000tonnes.The current study was conducted to analyse and compare the yield and nutro-chemical parameters of paneer samples extracted from five different milk samples. The Milk samples selected for the present study were Cow Milk, Buffalo milk, Organic milk, Homogenized milk and Pasteurized milk. The Nutro-chemical tests like Carbohydrates, Protein, Fats, Calcium and Phosphorus, Total Titratable Acid (TTA) were estimated. As a comparative analysis, the maximum results of the tests from the present study concluded that extraction of paneer from Pasteurized milk showed high yield than other milk samples and buffalo milk paneer showed high nutrient content than other 4 paneer samples comparatively.*

I. INTRODUCTION

Milk and paneer are rich source of protein, vitamins and minerals. They contain a variety of micro and macronutrients like Amino Acids, Vitamin B12, Calcium, Magnesium, Phosphorus and others. They do help in regulating and lowering high blood pressure and reducing cramps. Paneer would be an essential part of our daily diet in an ideal world when consumed under moderation with healthy lifestyle. Paneer is high in Calcium that helps in strengthening muscles and bones. Paneer as a probiotic, it helps in easy digestion when consumed in cooked form.Paneer is good source of fat-soluble vitamins. They contain amino acids, antioxidants and minerals. Paneer have a high caesin content, 30-32% fat, 50% protein, 1-3% carbohydrate, 31-34% calcium.Paneer contains high value of protein than paneer from plant source. Paneer contains less than 1% of sodium which may be advised to high blood

pressure patients to reduce the risk of heart problems.

The present study was conducted to analyse the yield, nutro-chemical parameters of 5 different paneer samples comparatively.

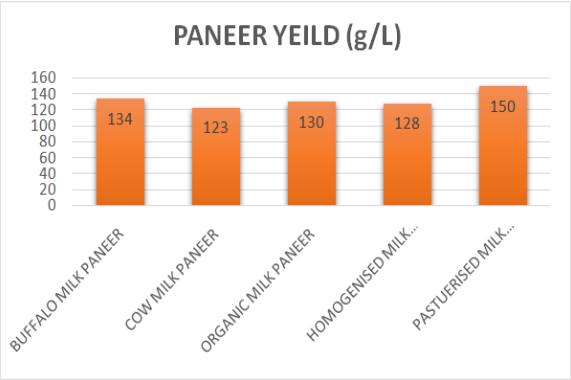
Objectives of the study

1. Selection of milk samples, extraction of paneer from selected milk samples.
2. To conduct and compare nutro-chemical analysis on 5 different paneer samples.

II. METHODOLOGY

In the present study, the yield and nutro-chemical tests were conducted. The selected milk samples were first boiled, coagulated and were made into paneer for the ease of yield and nutro-chemical analysis. Later Carbohydrates, Fats, Proteins, TTA, Calcium, Phosphorus test were conducted for all paneer samples.

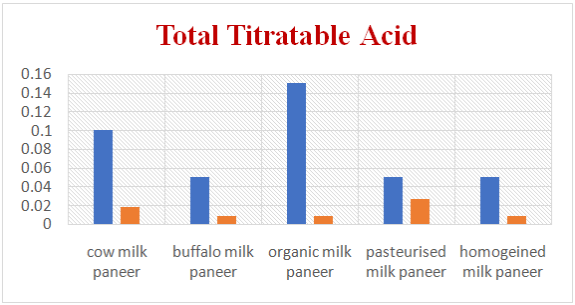
III RESULT AND DISCUSSION



Bar Graph of yield (g/L) of paneer from different milk samples

Above figure shows comparative analysis for yield of paneer extracted from 5 different bovine milk samples. It shows the yield of pasteurized milk paneer is highest with the yield of 150g/L, followed by buffalo milk paneer with 134g/L, organic milk paneer with 130g/L, where homogenised toned milk and cow milk paneer yield is less compared to above paneer yield i.e, 128g/L & 123g/L respectively.

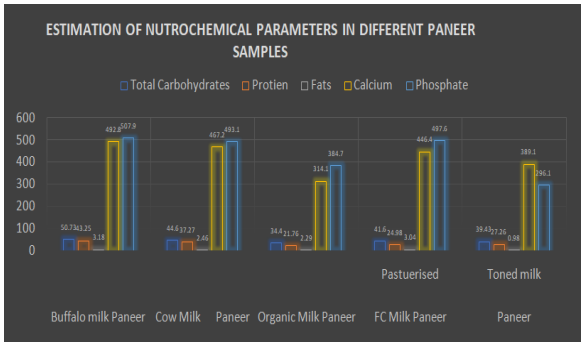
In a study conducted by ASF Shanaziya et al; (2018),Yield of paneer developed from cow milk with vinegar as coagulant was 134g/L which is significantly higher than the yield of cow milk paneer of the present study i.e, 123g/L. However, additional research is required.



Total titratable acid estimation

Above figure shows comparative analysis of Total Titratable Acid of Buffalo milk paneer, Cow Milk Paneer, Organic Milk Paneer, Homogenized Milk Paneer and Pasteurized Milk Paneer. According to Shukla et al, (2022) the range of acidity level of lactic acid directly related to TTA values. As per above figure the Organic

Milk Paneer shows higher TTA values compared to other milk paneers.



The estimation of nutro-chemical parameters of 5 different paneer samples

The preceding graph shows the estimation of carbohydrate, fat, protein, calcium and phosphorus content in each paneer sample. The graph illustrate the parameter values obtained for each paneer samples where an increase in parameters of Buffalo milk paneer is seen compared to all other 4 paneer samples. This point of the current study i.e supported by the study by Ariane Lang, (2020); the study found that buffalo milk have enriched nutritional value providing more protein, vitamins, and minerals than cow's milk paneer.

In a study conducted by Maurya, Neelesh. (2019), the comparison of basic nutro-chemical parameters of Indian Cheese (paneer) had higher values of carbohydrate, fat, protein and calcium when compared to the nutro-chemical parameters of paneer extracted from 5 different milk samples of present study

IV CONCLUSION

The Yield and Nutro-chemical properties of 5 paneer samples were analysed and compared in this study. Buffalo Milk Paneer, Cow Milk Paneer, Organic Milk Paneer, Homogenized Milk Paneer, Pasteurized milk paneer.Yield, Carbohydrates, Fats, Protein, Calcium, Phosphorus and TTA levels were measured. In comparison, Yield of paneer in Pasteurized milk was more than buffalo milk, cow milk, organic milk and homogenized milk. Buffalo milk paneer contained significantly high amount of carbohydrate, fats, protein, calcium, phosphorus than cow milk paneer, organic milk paneer, pasteurized milk paneer and homogenized milk paneer. TTA levels in Organic milk paneer increased as compared to other 4 paneer varieties.

REFERENCES

1. https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.researchgate.net/publication/369146371_Nutritional_Profile_Uses_and_Health_Benefits_of_Paneer&ved=2ahUKEwjPj93CmtP-AhUaa2wGHfgaCVwQFnoECC8QAQ

&usg=AOvVaw1992XYHqmuPag1NgA-2V6J

2. https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4008736/&ved=2ahUKEwi62bWlmtP-AhWpU2wGHTnQD4gQFnoECDkQAQ&usg=AOvVaw3j3JZ8xaKoWToaNbqGl-hy
3. https://www.healthline.com/nutrition/buffalo-milk#bottom-line
4. Kathy W. Warwick, R.D., CDE, Nutrition — By Ariane Lang, BSc, MBA on February 5, 2020
5. Khan, S. U., & Pal, M. A. (2011). Paneer production: A review. *Journal of food science and technology*, *48*(6), 645-660.
6. Kumar, S., Rai, D. C., Niranjan, K., & Bhat, Z. F. (2014). Paneer—An Indian soft cheese variant: a review. *Journal of food science and technology*, *51*, 821-831.
7. Maurya, Neelesh. (2019). THERAPEUTIC EFFECT OF SOYA BEAN CHUNKS SUPPLEMENTION DURING HEMODIALYSIS. Plant Archives. 19. 972-5210.
8. Shanaziya, A. S. F., Mangalika, U. L. P., &Nayananjalie, W. A. D. (2018). Effect of different coagulants on the quality of paneer made from cow milk. *Int. J. of Scientific and Research Publications*, *8*, 189-94.