

DAIRY CHEMISTRY

Dairy Chemistry is a constituent Department of Sheth M.C. College of Dairy Science since its inception in 1960. The college was a constituent part of the then Institute of Agriculture, Anand and then became a Faculty under Gujarat Agricultural University in 1972. In 2004, Gujarat Agricultural University was splitted in to four universities by Gujarat Act No. 5, and the Faculty became a constituent of Kamdhenu University. The Department is responsible for teaching various courses related to Dairy Chemistry, Food Chemistry and Quality Assurance at Under Graduate and Post Graduate level. It also handles research projects in the subject and participates in the extension activities.

Objective

To achieve excellence in the three mandated areas of the University, i. e. Teaching, Research and Extension.

Mission

- To acquire and disseminate up-to-date knowledge in the area of Dairy Chemistry, Quality Assurance and Food Chemistry.
- To develop manpower of B. Tech. (D.T.) Students with adequate knowledge of Chemistry of milk and milk products, their shelf-life, quality assurance, safety aspects, sanitation and hygiene of a dairy plant and brief overview of food chemistry.
- To develop manpower with excellence in Dairy Chemistry at Masters and Doctorate level.
- To propose research projects of national and international importance and acquire maximum funding from other agencies.
- To participate in Krishi-melas, science exhibition and out-reach programmes organized by the University and by other agencies.

Awards / Recognition received

1. Sharma, R. S.; Shri K.U. Patel Memorial Award (1985). All India Food Preservers' Association, New Delhi
2. Sharma, R. S.; "Hari Ohm Ashram Prerit Bhaikaka Inter University Smarak Trust" prize for the year 1986: Sardar Patel University, Vallabh Vidyanagar.
3. Aparnathi, K. D.; Jawaharlal Nehru's Books for standing First Class First with Distinction at Post-Graduate level during in the year 1986.

4. Sharma, R. S.; Narayan Anand Pandit Award (1991). All India Food Preservers Association, New Delhi.
5. Aparnathi, K. D.; Narayan Anant Pandit Award instituted by All India Food Preservers Association, New Delhi for the Best Review for year 1991.
6. Boghra V R(2002); Hari Om Ashram Award for the research work on “Detection of Vegetable Oils and or Hydrogenated Fats in Milk (Milk fat) by Rapid Method for Commercial Application” for the year 2002.
7. Boghra V R (2003) The best research paper award for the year 2003 was presented by Association of Food Scientists and Technologists (India), CFTRI, Mysore to Mamta Merai,
8. V. R. Boghra and RS Sharma (2003) for paper published on “Extraction of antioxygenic principles from *Tulsi* leaves and their effect on oxidative stability of ghee” in *J. Food Sci. Technol.*, 40:52-57
9. Boghra V R (2003) Second Best poster paper Award for research work on “Study on development of Continuous Shrikhand Thermization Machine by Indian Dairy Engineers Association, NDRI, Karnal, Haryana.
10. Aswani Kumar Rathour, Harsev Singh, K D Aparnathi and Mukesh Rastogi (2012) won first prize on the poster presentation entitled “AR protein test for raw milk as platform test at field level” at XL Dairy Industry Conference, 2012, IDA, New Delhi.
11. Smitha B., A.K. Jain, S.C. Parmar and K.D. Aparnathi (2013) won first prize on the poster presentation entitled “Development of ready-to-serve soup powder from blends of groundnut flour, tofu and whey powder” at National Seminar on “Innovative approaches in dairy industry” held during March 1-2, 2013, AAU, Anand.
12. Smitha B (2013) won second prize on the oral presentation entitled “Studies on physico-chemical and sensory characteristics of nutrient rich biscuits prepared from blends of peanut, coprecipitates and millet” at National Seminar on “Innovative approaches in dairy industry” held during March 1-2, 2013, AAU, Anand.
13. K N Wadhvani, B M Mehta and K D Aparnathi (2014) won 2nd Prize on poster entitled “ Nutrients composition of Kachchhi Camel milk “ at National seminar on ‘New Dimensional approaches for livestock productivity and profitability’ held during 28th to 30th January, 2014 at CVS & AH, AAU, Anand.
14. Mehul Soni, Smitha Balakrishnan, A I Shaikh and K D Aparnathi (2014) won 3rd prize on poster entitled “ Antioxidant potential of turmeric in ghee and associated health benefits” at National seminar on ‘Nutrigenomics: a promising tool for combating

chronic diseases' held at P G Department of Home Science at S P University, Vallabh Vidyanagar.

Process Technologies / Methodologies Developed/ Standardized

1. Developed technology for utilization of soyabean and groundnuts as protein source in foods such as roasted soya, soya flakes, soya wadis, ganthias, biscuits, paneer, kulfi mixes, gulabjamun mixes, milk-chocolates, kalakand, chikki, shakkarpara, namakpara ready to eat soya sev (noodles), peanut spread, ready to serve soup powder etc.
2. Varieties of annatto plants were selected and method was standardized for manufacturing annatto butter colour.
3. Detection of vegetable oils and/or hydrogenated fats in milk (milk fat) by rapid method for commercial application.
4. Standardization of detection methods for urea in milk and its application for routine analysis.
5. Evaluation of various antioxidants from natural sources for their effectiveness in controlling oxidative rancidity in ghee.
6. Method has been standardized for utilization of whey in preparation of ice candy.
7. Comparative appraisal of qualitative tests for performance in detection of adulterants in milk.
8. Evaluation of selected culinary spices/herbs used to enhance the shelf life of paneer.
9. Method has been standardized for utilization of whey in preparation of cultured buttermilk
10. Methods were evaluated for monitoring the primary and secondary stage of oxidation in ghee.
11. Database has been generated on composition, properties and processing related parameters of camel milk. Evaluated the suitability of camel milk for preparation of selected traditional Indian dairy products.
12. Database has been generated on nitrogen fractions in milk.

Research Projects Handled

1. Research scheme on k-casein, sponsored by Indian Council of Agricultural Research, New Delhi.
2. Collaborative Research on genetic polymorphism of milk proteins in cattle and buffaloes as indicator of production traits, sponsored by National Dairy Development Board, Anand.

3. Detection of vegetable oils and/or hydrogenated fats in milk (milk fat) by rapid method for commercial application, the Departmental research project.
4. Standardization of detection methods for urea in milk and its application for routine analysis, sponsored by Amul Dairy, Anand.
5. Development of Technology for Utilization of Soyabean and Groundnuts and its Meal as Protein Rich Materials for Fabrication of Food for Human Consumption.
6. Standardization of process for manufacture of annatto butter colour.
7. Utilization of whey in dairy and food products
 - Standardization of formulations for preparation of ice candy type frozen product using whey.

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1. Evaluation of selected natural food additives for their suitability to enhance the quality of dairy products
 - Evaluation of selected spices/herbs for their suitability to enhance the shelf life of paneer.

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1. Characterization of Khoa prepared from camel milk and evaluation of its suitability for preparation of selected sweets
 2. Preparation of ghee from camel milk and evaluation of its shelf life
 3. Study on distribution pattern of nitrogenous components in milk.
 4. Studies on physico-chemical and sensory characteristics of iron rich.

Research Projects currently undergoing

1. Development of methods for detection of adulterants in milk and milk products.
 - Screening of qualitative tests for detection of adulterants in milk.
 - Application of Infrared spectroscopy in detection of foreign fats and oils in ghee

1. Utilization of whey in dairy and food products
 - Utilization of paneer whey in cultured butter milk
 - Development of whey based medium for biomass production of lactic acid bacteria

1. Evaluation of selected natural food additives for their suitability to enhance the quality of dairy products
 - Evaluation of common culinary spices as natural antioxidant for ghee

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1. Evaluation of MilkoScreen for its Efficacy in Analysis of Milk

2. Evaluation of Everest Milk Analyzers and Adulteration Detection Strips for their Efficacy in Analysis of Milk
3. Comparative appraisal of physical, chemical, instrumental and sensory evaluation methods for monitoring oxidative deterioration of ghee.

Extension

1. Conducted short term training programme on “Advanced Laboratory Chemical Quality Assurance” for Industry personnel.
2. Conducted Training programmes through Vidya Dairy on “Microbial and Chemical Analysis of Milk and Milk Products”.
3. Participation in krushi/ kisan mela organized by the University, Government and Non-government organizations.
4. Arrange of demonstration for detection of adulteration in milk and ghee in the Krushi/ kisan melas.
5. Participation in krushi mahotsav organized by Government of Gujarat.
6. Participation as resource person in trading programs organized other Institutions.
7. Providing technical information required by state or central Government.
8. Providing technical information / know-how dairy plants and other organizations for solving their problems.
9. Providing analytical services to the Dairy industries for chemical analysis of milk and milk products.
10. Participation as speaker in seminars, workshops and symposiums organized by the University and other organizations.
11. Published booklets on in Gujarati language on “Clean milk production” and “Milk and its preservation”.
12. Published number of articles in Gujarati language on various topics which are useful for the farmers.

Contact

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