



CENTRE OF ADVANCED FACULTY TRAINING DAIRY TECHNOLOGY National Dairy Research Institute, Karnal

Introduction

A premier Division of the Institute, Dairy Technology Division is involved in teaching, research and consultancy activities. Dairy Technology Division of NDRI spearheads the Nation's most prestigious under-graduate programme in Dairy Technology and provides elite 'human resource' for various managerial positions in the industry. The division was identified as a key component of the UNDP Centre of Excellence in Dairy Processing. The main R&D thrust of Dairy Technology Division has been on the development of appropriate technologies for processing of buffalo milk which possesses different processing properties than cow milk. The current focus is on up-gradation of technologies of Indian traditional dairy products and functional dairy foods. The Division has adequate facilities for conducting research in the field of nutraceuticals and functional foods. In recent years a number of products have been developed that can fulfill the aspirations of consumers for convenience, long-life, safety and health benefit. Technologies of several of these newly developed products have been transferred to industry for commercialization.

Objectives of CAFT

1. To provide state-of-the-art knowledge, to the teachers of State Agricultural Universities, ICAR institutions and Deemed Universities, in the emerging areas of Dairy Foods Technology.
2. To develop linkages with the academic institutions within and outside the NARS.
3. To strengthen the teaching and research infrastructure for knowledge dissemination.

Faculty: Name & Designation (as on 30.09.2011)

Name	Designation	Specialization
Dr. A.A. Patel	Principal Scientist & Head	Convenience Products, Indigenous Dairy Analogues, Dairy Food Rheology
Dr. Vijay Kumar	Principal Scientist	By-Product Utilization
Dr. S.K Kanawjia	Principal Scientist	Cheese & Fermented Foods
Dr. D.K. Thompkinson	Principal Scientist	Infant and Specialty foods
Dr. R.R.B. Singh	Principal Scientist	Novel Dairy Products, Advanced Dairy Processing
Dr. (Mrs) Latha Sabikhi	Senior Scientist	Fermented Health Foods
Dr. Ashish Kumar Singh	Senior Scientist	Composite and Health foods
Dr. Kaushik Khamrui	Senior Scientist	Indigenous Dairy Products, Sensory Evaluation
Dr. P. Narender Raju	Scientist	Health Foods and Packaging
Mr. Ganga Sahay Meena	Scientist	By-product Utilization
Mr. Yogesh Khetra	Scientist	Cheese & Fermented Foods
Mr. Prateek Sharma	Scientist	Functional Foods, Food Rheology
Mr. Sathish Kumar,	Scientist	Novel Dairy Foods

M.H.		
Mr. Devaraja, H.C.	Scientist	Fat-rich Dairy Products

Human Resource Development

Particulars of Short Courses / Training program for HRD conducted during XI plan period

S.No.	Name of the Program	Period	No. of Participants		
			Internal	External	Total
1.	Technological advances in the utilization of dairy by-products	27 th Feb – 18 th Mar, 2008	2	13	15
2.	Sensory and related techniques for evaluation of dairy foods	17 th Jun – 7 th Jul, 2008	0	19	19
3.	Advances in processing and quality assurance of dairy foods	22 nd Mar – 11 th Apr, 2011	3	12	15
4.	Technological developments in cheese and fermented dairy foods	5 th – 25 th Jul, 2011	0	10	10

Infrastructure development (equipments etc.)

1. DLP Projector

Renovation of Lecture Room/Laboratories

1. UG and PG laboratories have been renovated.
2. The computer room / Divisional library room renovation is in progress.

Library upgraded:

S.No.	Title	Author
1.	Wiley Encyclopedia of Food Science and Technology Vol I	Frederick J. Francis
2.	Wiley Encyclopedia of Food Science and Technology Vol II	Frederick J. Francis
3.	Wiley Encyclopedia of Food Science and Technology Vol III	Frederick J. Francis
4.	Wiley Encyclopedia of Food Science and Technology Vol IV	Frederick J. Francis
5.	Foods of Plant origin (Production, Technology and Human Nutrition)	D.K.Salunble & S.S.Despande
6.	Optimizing Sweet taste in foods	William J. Spillane
7.	Beverages, Technology Chemistry and Microbiology Vol II Food Products Series	Alan H. Varmaneld
8.	Nonthermal Presentation of Food	GustavoV Barbosar Barry G. Swan
9.	Water activity in Foods Fundamental & Applications	Gustovo V. Barbosa. Canovas
10.	Chemical and Functional Properties of Food Components	Zdzislaw E. Sikarski
11.	Functional Dairy Products	Tina-Mattila Sandholm
12.	Food Preservation Techniques	Peter Zeuthem & Leif Bogh
13.	Proteins in food processing	R.Y. Yada
14.	Food Materials Science, Principles & Practices	John A. Bower
15.	Statistical methods for Food Science	Jose Miguel Aguilera
16.	The sensory evaluation of dairy products	Stephanie dark

17.	Introduction of Food Engineering	R. Paul Singh
18.	Standard methods for examination of Dairy Products	H. Michaelwehr
19.	Dairy Processing & Quality assurance	Ramesh C.Chandan
20.	Practical Guide to Industrial Drying	Mujumdar's
21.	ICAR Guidelines for IPR Management & Technology Transfer/ Commercialization	S K Joshi
22.	Technology of Condensed & Dried Milks	H G Patel
23.	All India Dairy Business Directory (Dairy Yearbook)	Sadana

Awards/Recognitions

1. Dr. G.R. Patil, Dr. R.R.B. Singh, Dr. A.A. Patel, and others were awarded with **ICAR Award for Interdisciplinary Team Research** for the year 2010.
2. Dr. Ashish Kumar Singh was awarded with **Dr. P.G. Nair Award** (2005-09) by Alumni Association of NDRI, Karnal on the occasion of 9th Convocation of NDRI, Karnal on 19th Feb, 2011.
3. Dr. Ashish Kumar Singh was awarded with **Erasmus Mundus Fellowship of European Union** to visit three consortium partners Dublin Institute of Technology, Dublin (Ireland), KaHo-Sint Leiven, Gent (Belgium) and Anhalt University of Applied Sciences, Berburg (Germany) as Guest Faculty for European Master's Degree in Food Science, Technology and Nutrition during 14th Feb, to 14th May, 2010.
4. Dr. R.R.B. Singh was awarded with **Erasmus Mundus Fellowship of European Union** to visit three consortium partners Dublin Institute of Technology, Dublin (Ireland), Universidade Catolica Portuguesa-ESB, Porto, Portugal and Hogeschool Sint-Lieven, Gent (Belgium) during 18th Feb – 14th May, 2008.
5. Dr. R.R.B. Singh and others were awarded with **Best Poster Award** at the 20th Indian Convention of Food Scientists and Technologists held at Bengaluru during 21-23 Dec, 2009.
6. Dr. Ashish Kumar Singh and others were awarded with **Second Best Paper Award** for the Research Paper published in Indian Journal of Dairy Science by Indian Dairy Association in 2010.
7. Dr. Ashish Kumar Singh was awarded with **Dr. P.D. Sethi Research Paper Annual Award** (2009).
8. Dr. Ashish Kumar Singh and others were awarded with **Best Paper Award** at XXXV Dairy Industry Conference organized by Indian Dairy Association at BHU, Varanasi during 19-21 Feb, 2008.
9. Dr. Latha Sabikhi and others were awarded with **Best Poster Award** at the 11th Egyptian Conference on "Milk and Dairy Products for a Healthy Future" Cairo, Egypt held during 1-3 Nov, 2010.

Publications*

• International Journals

- Alam, T. and Goyal, G.K. (2007) Influence of modified atmosphere packaging and storage at deep freeze conditions on the sensory characteristics of mozzarella cheese, *Milchwissenschaft*, 62(3): 311-314.
- Gawande, H; Arora, S; Sharma, V; Wadhwa, B. K; George, V; Sharma, G. S and Singh, A. K (2007) Sweet Choices: Sugar replacement with Aspartame in Dairy and Non Dairy Products. *International Journal of Food Science Technology and Nutrition*. 1(1): 115 – 127.
- George, V., Arora, S., Wadhwa, B.K. Singh, A.K. and Sharma, G.S. (2010). Optimization of sweetener blends for preparation of lassi. *International Journal of Dairy Technology*, 63(2):256-261.

- Kumar, S., Kanawjia, S.K. and Kumar, S. (2011). The effect of varying casein/fat ratio on physicochemical and sensory qualities of Feta-type cheese made using buffalo milk. *International Journal of Dairy Technology*, 64(3):380-385.
- Nair, K. and Thompkinson, D.K. (2008). Optimization of ingredients for the formulation of a direct acidified whey based lassi-like beverage. *International Journal of Dairy Technology*, 61(2):199-205.
- Raju, P.N. and Pal, D. (2009). The physico-chemical, sensory and textural properties of *misti dahi* prepared from reduced fat buffalo milk. *Food and Bioprocess Technology*. 2(1): 101-108.
- Raju, P.N. and Pal, D. (2011). Effect of bulking agents on the quality of artificially sweetened *misti dahi* (caramel colored sweetened yoghurt) prepared from reduced fat buffalo milk. *LWT-Food Science and Technology*. 44(9): 1835-1843.
- Rao, S.R. and Goyal, G.K. (2009). Effect of packaging on the chemical quality of kalakand. *International Journal of Food Science, Technology and Nutrition*, 3(1-2): 41-52.
- Sabikhi, L. (2007). Designer Milk. *Advances in Food and Nutrition Research*, 53: 161-198.
- Sabikhi, L., Babu, R., Thompkinson, D.K. and Kapila, S. (2010). Resistance of microencapsulated *Lactobacillus acidophilus* LA1 to processing treatments and simulated gut conditions. *Food and Bioprocess Technology*, 3(4): 586-593.
- Sharma, P., Singh, R.R.B., Singh, A.K., Patel, A.A. and Patil, G.R. (2009). Sorption isotherms and thermodynamics of water sorption of ready-to-use Basundi mix. *LWT-Food Science and Technology*, 42(1): 441-445.
- Singh, A.K., Tiwari, S., Singh, R.R.B., Tyagi, R.K. and Arora, S. (2008). Optimization of ingredient levels for manufacturing malted milk beverage using response surface methodology. *International Journal of Dairy Technology*, 61(2):192-198.
- Singh, P. and Goyal, G.K (2009). Influence of Modified Atmosphere Packaging (MAP) and refrigerated storage on the sensory characteristics of ready-to-bake pizza. *International Journal of Food Science, Technology and Nutrition*, 2(2):171-179.
- Singh, R.R.B., Ruhil, A.P., Jain, D.K., Patel, A.A. and Patil, G.R. (2009). Prediction of sensory quality of UHT milk – a comparison of kinetic and neural network approaches. *Journal of Food Engineering*, 92(2): 146-151.

- **Indian Journals**

- Alam, T. and Goyal, G.K. (2007) Changes in functional characteristics of mozzarella cheese during storage as influenced by modified atmosphere packaging (MAP), *Indian J. Anim. Sci.*, 77(2): 196-200.
- Chawla, R., Patil, G.R. and Singh, A.K. (2011). Sensory characterization of *doda burfi* (Indian milk cake) using principal component analysis. *Journal of Food Science and Technology*, DOI: 10.1007/s13197-011-0524-8.
- Modha, H. and Pal, D. (2010). Optimization of Rabadi-like fermented milk beverage using pearl millet. *Journal of Food Science and Technology*, 48(2): 190-196.
- Rao, S. R. and Goyal, G.K. (2007) Effect of packaging and storage on the sensory quality of kalakand, *Indian J. Dairy Sci.*, 60(2): 77-80.
- Ruhil, A.P., Singh, R.R.B., Jain, D.K., Patel, A.A. and Patil, G.R. (2011). A comparative study of kinetic and connectionist modeling for shelf life of Basundi mix. *Journal of Food Science and Technology*, 48(2): 204-210.
- Shrivastava, S. and Goyal, G.K. (2009). Effect of Modified Atmosphere Packaging (MAP) on the chemical quality of paneer. *Indian Journal of Dairy Science*, 62(4):255-261.

- **Books**

Tomar, S.K., Singh, R., Singh, A. K., Arora, S. and Singh, R.R.B. (2011). *Functional Dairy Foods*. Satish Serial Publishing House, Azadpur, Delhi.

Thompkinson, D.K. and Sabikhi, L. (2012). *Quality Milk Production and Processing Technology*. New India Publishing Agency, New Delhi.

- **Manuals**

Thompkinson, D.K. (2011). *Rheology of Dairy and Food Products*. Laboratory Manual. NDRI, Karnal.

- **Any other (Lecture Compendia)**

Kanawjia, S. K., Khetra, Y. and Chatterjee, A. (2011). *Technological Developments in Cheese and Fermented Dairy Products*. Lecture Compendium. 25th Short Course, CAFT in Dairy Processing, NDRI, Karnal.

Ram, C., Gupta, V.K., Vija, S., Kumar, N. and Manju, G. (2011). *Advances in Processing and Quality Assurance of Dairy Foods*. Lecture Compendium. 24th Short Course, CAFT in Dairy Processing, NDRI, Karnal.

Pal, D., Gupta, V.K., Singh. R.R.B., Sabikhi, L., Singh. A.K. and Arora, S. (2008). *Sensory and Related Techniques for Evaluation of Dairy Foods*. Lecture Compendium. 23rd Short Course, CAS in Dairy Technology, NDRI, Karnal.

Gupta, V.K. (2008). *Technological Advances in the Utilization of Dairy By-products*. Lecture Compendium. 22nd Short Course, CAS in Dairy Technology, NDRI, Karnal.

Financial Statement

Expenditure under CAFT during XI plan

Head	2007-08	2008-09	2009-10	2010-11	2011-12*
Operating cost of Training	1,73,533.00	1,52,497.00	-	2,84,060.00	2,05,000.00
Recurring Contingency	1,68,708.00	1,82,150.00	1,34,140.00	1,99,410.00	42,262.00
Non-Recurring Contingency	-	-	-	-	(**)
T.A.		35,895.00	22,298.00	26,420.00	
Library	69,691.00	50,000.00		29,997.00	4685.00
Total	4,11,932.00	4,20,542.00	1,56,438.00	5,39,887.00	2,51,947.00

* Till September 30, 2011

** Rs. 1.50 is anticipated to be utilized for renovation of Division Library room by March 2012