

Dr. C.Radha
Traditional Foods and Applied Nutrition
(Formerly Department of Protein Chemistry and Technology)
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Research area

Isolation of biomolecules from Moringa seed and studying their health benefits: Our research activities involve isolation of biomolecules from oilseeds and studying their biological activities. My group is working on various aspects of moringa seeds since 2009. Crude extract of Moringa seeds has shown to have many health benefits. Identification of specific biomolecule(s) from moringa seeds and its evaluation against specific disease(s) will be of great national importance. Presently we are involved in the isolation, purification and characterization of proteins, peptides, carbohydrates and polyphenols with an objective to study the antihypertensive and hypocholesterolemic properties of moringa seed.

Water purification technology using *Moringa oleifera* seed flour: India is one of the largest producers of moringa seed and the moringa seed cake obtained after oil extraction is exported at a low price. Moringa seed flour is well known for its water purification and antimicrobial properties. From the literature, it is visible that in spite of its well documented water purification capacity, bacterial contamination of the moringa seed treated water limits its use. We have developed a technology for water purification using moringa seed protein as a flocculant and released to industries.

Ongoing Research

1. Isolation of biomolecules from plant extracts and studying their health benefits with special reference to *Moringaoleifera*
2. Purification of water using moringa seed protein
3. Structural stability of enzymes and proteins
4. Physico-chemical and functional properties of oilseed proteins
5. Enzymatic and physical modification of proteins for better functionality and nutrition

Major areas of expertise

1. Isolation and characterization of biomolecules.
2. Biophysical studies of proteins and enzymes
3. Purification and characterization of proteins
4. Preparation and characterization of protein hydrolysates from plant/animal proteins

Honours and Awards

1. CSIR Scheme on Mobility of Scientific and Technical personnel to industry. Worked from 12-06-2019 to 30-05-2021 with Marvel Tree Biosolutions, Mysore an industry working on Moringa oleifera.
2. CSIR CFTRI Best Technical Contribution Award in the area of Protein Chemistry for 2016-17
3. Bio-CARe Award from DBT, Government of India. DBT has awarded an independent project worth Rs.33.71 Lakhs and a Honorarium of Rs.10,000 per month for a period of 3 years.
4. Shree Haveliram Pasrich Prize 2004: For the poster entitled “Effect of incorporation of defatted soy flour on the quality of saltine crackers” by Radha, C., Leelavathi, K. and Prakash,V. Poster presented in the 36th Annual Meeting of Nutrition Society of India, 5-6 Nov. 2004, Mysore.
5. CSIR Best Poster Award 2004: For the poster entitled “Effect of incorporation of defatted soy flour on the quality of saltine crackers” by Radha, C., Leelavathi, K. and Prakash,V. Poster presented in the 36th Annual Meeting of Nutrition Society of India, 5-6 Nov. 2004, Mysore.
6. Moideen Memorial Award, 1988: For scoring highest mark in B.Sc. Chemistry during 1987-88 Academic Year at MESCollege, Mannarghat, Kerala.

Research grants

1. A process for the production of pea protein isolate (2022). Honneleagri LLP, Mysore. **Project Leader,Radha C.** Rs.15.34 Lakhs.
2. Use of Moringa seed flour as a potential source for water purification. Ministry of Drinking Water and Sanitation. (GAP 467),**Principal Investigator,Radha C.**, Rs.24.84 Lakhs.
3. Isolation of biomolecules from Moringa seeds and studying its health benefits. DBT Bio-Care Project. (GAP 397)**Principal Investigator,Radha, C.** Rs.33.37 Lakhs.
4. High protein low calorie butter spread. MLP 0127, **Principal InvestigatorRadha, C.** Rs.6.00 Lakhs.
5. Debittering of Moringa seed cake, Private Industry, Tamil Nadu, (SSP 164). **Project Leader,Radha, C.:** Rs.2.26 Lakhs.

Teaching Experience

Faculty for M.Sc Food Technology conducted by CFTRI

Faculty for different short term training courses in the area of Protein Chemistry and Technology.

Human Resource Development/Teaching Experience

Recognized guide for Ph.D under AcSIR., CSIR-CFTRI.

Dr. S. Anudeep. Ph.D,

Moringa oleifera seed soluble fibre: its prebiotic and hypocholesterolemic implications University of Mysore, Ph.D awarded in Oct. 2020.

Dr. Romuald Willy Saa, CSIR-TWAS fellow. Ph.D

Influence of three technological treatments (soaking, germination and roasting) on the physicochemical, functional and nutritional properties **of *Moringa oleifera*** seeds. Ph.D Awarded by African University.

Dr.Babatuntunde Sunday Ogunsina, UNU Post-doctoral Fellow. (1-1-2009 to 30-10-09). Value addition to drum stick (***Moringa oleifera***) seeds using various adaptable technologies.

Research fellows in various Grant-in-aid projects

Sri Ankit Jain, Project JRF, Ministry of Drinking Water and Sanitation. Use of **Moringa** seed flour as a potential source for water purification

Sri Kishan Bharadwaj, Project JRF, Ministry of Drinking Water and Sanitation. Use of **Moringa** seed flour as a potential source for water

Ms. Komal Project JRF, Ministry of Drinking Water and Sanitation. Use of Moringa seed flour as a potential source for water purification

Sri Darshan C.M., purification Project JRF, Ministry of Drinking Water and Sanitation. Use of **Moringa** seed flour as a potential source for water purification

Supervised Ms.Monica Oswal, Project Assistant , Production of Pea Protein isolate (SSP 323)

Supervised Ms.Bismi Anjel John ,Project Assistant.Debitting of moringa seed cake (SSP 164)

Students guided for M.Sc/M.Techdissertation – 21

1. Puja Singh (2022). Preparation, nutritional, evaluation and characterization of Moringa Leaf and seed grits. M.Sc Biotechnology, VinobaBhave University, Jharkhand – 825 301.
2. Juhi Agrawal (2018). Nutritional enrichment of cookies by supplementation with Moringa oleifera seeds. M.Sc. Food Technology, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad.
3. Komal Choudhary (2018). Extraction and characterization of Moringa leaf polyphenols. B.Tech Biotechnology. D.Y. Patil Deemed University, School of Biotechnology and Bioinformatics, Mumbai. Guide: Dr C Radha.
4. Tejash Singh Malawat (2017). Quality evaluation of water treated with moringa seed protein. Dr B. Lal Institute of Biotechnology, M.Sc Microbiology.
5. Arti Awasthi (2017). Fractionation and Partial characterization of insoluble dietary fiber of Moringa seed. M.Sc Biotechnology, St. Aloysius College, Jabalpur.
6. Aruna Bidare (2017). Development and quality evaluation of atta enriched with Moringa seed dietary fibre. M.Sc, Industrial Microbiology, Devi Ahilya University, Indore – 451 001.
7. Muhammed Fayis EK (2017). Comparative study of anti nutritional factors in *moringa oleifera* leaves and seed. Safi Institute of Advanced Studies, Malappuram, University of Calicut, M.Sc. Food Science and Technology.
8. Minu, M. (2017). Nutritional evaluation of Moringaoleifera leaf and seed protein. Chinmaya Arts and Science College for Women, University of Kannur. M.Sc Biotechnology. Guide
9. Anjali Jose (2016). Effect of moringa seed protein on physic chemical parameters of water treatment, Kannur university, M.Sc Biotechnology (partially guided)
10. Fathima Majina E.P (2016) Anti-microbial activity of moringa seed protein for water purification. Kannur university, M.Sc Biotechnology
11. Mohamed Naseef K.K (2016). Preparation and characterization of protein isolates from different seeds, Mahatma Gandhi University, Thiruvalla, M.Sc Food science and Technology, Co-Guide:
12. Poornima, S. (2015). Bioactive peptides from *Moringa oleifera* seeds. University of Mysore, M.Sc Zoology.
13. Venkatesh, S. (2015). Isolation of dietary fiber from *Moringa oleifera* seeds and its chemical characterization, SRM University, Chennai, M. Tech, Food Safety and Quality Management.
14. Shruthi M Adya (2014). Immuno modulatory effect of *Moringa oleiferaseed* polysaccharides, University of Mysore, Integrated M Sc Molecular Biology,
15. Pooja Mondal (2014) Extraction of albumins from *Moringa oleiferaseed* meal using membrane technology. Vellore Institute of Technology, Chennai, B.TechBiotechnology,

16. Ankit Jain (2013). *Moringa oleifera* seed protein isolate preparation: Influence of Hofmeister ions and optimization by RSM. National Institute of Technology, Surathkal M.Tech Industrial Biotechnology,
17. Aswathy AR (2012). Studies on the antioxidant, antibacterial and water purification properties of the proteins isolated from *Moringa oleifera* seed flour. University of Kannur, M.Sc. Biotechnology, School of Life Sciences, Kannur. Guide: Dr S P Muthukumar, (Co-PI of the project)
18. Anu M (2012) Studies on bioactivity of Arginine rich peptides from groundnut. Cochin University of Science and Technology, M.Sc (Biotechnology)
19. Suchithra. P (2012). Protein enriched pasta from debittered *Moringa oleifera* seed flour. University of Calicut, M.Sc. (Food Science and Technology)
20. Hebina Babu K.T (2012). Quality assessment of debittered *Moringa oleifera* seed flour. University of Calicut. M.Sc. (Food Science and Technology)
21. Subitha, R. (2010). Bioactive peptides from groundnut. Dr Mahalingam Centre for Research and Development, Nallamuthu Gounder Mahalingam College, Pollachi.

Research Papers published – 30

1. Romuald Willy Saa, Edith Fombang Nig, Cheruppanpullil Radha, Elie Baudelaire, Ndiantou Nicolas, Nintang Yanou. (2022). Effect of soaking, germination and roasting on the proximate composition, antinutrient content and some physicochemical properties of defatted ***Moringa oleifera*** seed flour. Journal of Food Processing and Preservation. Online Publication, <https://doi.org/10.1111/jfpp.16329>
2. Juhi Agrawal, Ashwath Kumar, K., Indrani, D. and Radha, C. (2022). Effect of ***Moringa oleifera*** seed flour on the rheological physico-sensory, protein digestibility and fatty acid profile of cookies. Journal of Food Science and Technol. <https://doi.org/10.1111/jfpp.16329>.
3. Darshan, C.M., Bharadwaj, K.R., Tejash, S.M., Negi, P.S., Haware, D.J. and Radha, C. (2020). ***Moringa oleifera*** seed protein isolate as an alternative for purifying turbid water. *Desalination and Water Treatment*, 203, 129-136.
4. Ankit Jain, Subramanian, R., Manohar B. and Radha C. (2019) Preparation, characterization and functional properties of ***Moringa oleifera*** seed protein isolate. J. Food Sci. Technol. <https://doi.org/10.1007/s13197-019-03690-0>.
5. Patel P., Jethani, H., Radha C. et al (2019). Development of a carotenoid enriched probiotic yogurt from fresh biomass of Spirulina and its characterization. J Food Sci. Technol, 56, 3721-3731. <https://doi.org/10.1007/s13197-0-019-03844-0>
6. Swetha, M.P., Radha, C. and Muthu Kumar, S.P. (2018). Bioaccessibility and bioavailability of ***Moringa oleifera*** seed flour polyphenols. *Journal of*

- Food Measurement and Characterization.* Online. doi.org/10.1007/211694-018-9806-4.
7. Swetha, M.P., Radha, C and Muthu Kumar, S.P. (2018).Effect of bound phenolic from defatted ***Moringa oleifera*** seed flour on diet induced hypercholesterolemic mice. *Journal of Food Biochemistry*. DOI: 10.1111/jbc.1253
 8. Anudeep S and Radha, C. (2018). Carbohydrates of *Moringaoleifera* seeds. *International Journal of Research and Analytical Reviews*. 5: 103-108.
 9. SandanamudiAnudeep, Vaddi K. Prasanna, Shruthi M. Adya, CheruppapullilRadha (2016). Characterization of soluble dietary fiber from ***Moringa oleifera*** seeds and its immunomodulatory effects. *International Journal of Biological Macromolecules*, 91 (2016),656-662. doi:10.1016/j.ijbiomac.2016.06.013
 10. AnudeepSandanamudi, Kishan R. Bharadwaj, RadhaCheruppanpullil, Data for chitin binding activity of ***Moringa*** seed resistant protein (MSRP), *Data in Brief*, 9, 335–337, 2016. DOI: 10.1016/j.dib.2016.08.070
 11. Radha C., Ogunsina B.S. ,HebinaBabu K.T (2015).. Some Quality and Micro-structural Characteristics of Soup Enriched with Debittered***Moringa oleifera*** seeds Flour *American Journal of Food Science and Technology*, Vol. 3, No. 6, 145-149
 12. InduVasudevan, Ankit Jain, RadhaCheruppanpullil (2015) Evaluation of antioxidant activity of soluble and bound phenolics from groundnut (*Arachishypogaea* L.) *International Journal of Engineering & Scientific Research* Volume 3, Issue 3, 76-98
 13. Ankit Jain, Maya Prakash and C.Radha , (2015) Extraction and evaluation of functional properties of groundnut protein concentrate *J Food SciTechnol* , 52 (10), 6655-6662
 14. Vishwanath S Vallabha, T. N. Indira, A. Jyothi Lakshmi, C. Radha, Purnima KaulTiku (2015) Enzymatic process of rice bran: a stabilized functional food with nutraceuticals and nutrients, *J Food SciTechnol* DOI 10.1007/s13197-015-1926-9
 15. Govardhan Sing, R.S., Negi, P.S. and Radha, C. (2013). Phenolic composition, antioxidant and antimicrobial activities of free and bound phenolic extracts of ***Moringa oleifera*** seed flour. *Journal of Functional Foods*, 5, 1883-1891.
 16. Ogunsina, B.S., Bhatnagar, A.S., Indira, T.N. and Radha, C. (2012). The Proximate composition of African bush mango kernels (*Irvingiagabonensis*) and characteristics of its oil. *Ife Journal of Technology*, 14(1), 177-183.
 17. Ogunsina, B.S., Indira, T.N., Bhatnagar, A.S., Radha, C., Debnath, S., and Gopalakrishna, A.G. (2011). Quality characteristics and stability of ***Moringa oleifera*** seed oil of Indian origin. *Journal of Food Science and Technology*. Online

18. Govardhan Singh, R.S., Ogunsina, B.S. and Radha, C. (2011). Protein extractability from defatted ***Moringa oleifera*** Lam. Seeds flour. *Ife Journal of Science*, 13(1), 121-127.
19. Ogunsina, B.S., Radha, C. and Indrani, D. (2011). Quality characteristics of bread and cookies enriched with debittered ***Moringa oleifera*** seed flour. *Int. J. Food Sci. Nutr.* 62(2), 185-194.
20. Ogunsina, B.S. and Radha, C. (2010). Comparative study of the functional and physico-chemical properties of debittered **moringa** seeds and soybeans flours. *Ife Journal of Technology*, 19(1), 85-92.
21. Ogunsina, B.S., Radha, C. and Govardhan Singh (2010). Physicochemical and functional Properties of full fat and defatted ***Moringa oleifera*** kernel flour. *International Journal of Food Science & Technology*, 45, 2433-2439.
22. Radha, C. and Prakash, V. (2009). Structural and functional properties of heat-processed soybean flour: Effect of proteolytic modification. *Food Science and Technology International*, 15, 453-463.
23. UjawalHegde, Jyothi Lakshmi, A., Radha, C., Ramesh Kumar, P. and Jamuna Prakash (2009). Effect of soya protein on the dialysability of exogenous iron and zinc. *Food Chemistry*. 117, 577-581.
24. Radha, C., Ramesh Kumar, P. and Prakash, V. (2008). Enzymatic modification as a tool to improve the functional properties of heat processed soy flour. *Journal of the Science of Food and Agriculture*. 88, 336-343.
25. Radha, C., Ramesh Kumar, P. and Prakash, V. (2008). Preparation and characterization of a protein hydrolysate from an oilseed flour mixture. *Food Chemistry*, 106, 1166-1174.
26. Bhaskar, N., Benila, T., Radha, C. and Lalitha, R.G. (2008). Optimization of enzymatic hydrolysis of visceral waste proteins of Catla (*Catlacatla*) for preparing protein hydrolysate using a commercial protease. *Bioresource Technology*, 99, 335-343.
27. Rhicha Sinha, Radha, C., Jamuna Prakash and Purnima Kaul. (2007). Whey protein hydrolysate: Functional properties, nutritional quality and utilization in beverage formulation. *Food Chemistry*, 101, 1484-1491.
28. Bhaskar, N., Modi, V.K., Govindaraju, K., Radha, C. and Lalitha, R.G. (2007). Utilization of meat industry by products: Protein hydrolysate from sheep visceral mass. *Bioresource Technology*, 98, 388-394.
29. Radha, C., Muralidhara B.K., Kumar P.R., Tasneem Rand Prakash, V. (1998). Thermal stabilization of the multimeric proteins – A case study with alpha globulin. *Indian Journal of Biochemistry and Biophysics*. 76-85.
30. Rajendran, S., Radha, C., and Prakash, V. (1995). Mechanism of solvent induced thermal stabilization of alpha-amylase from *Bacillus amyloliquefaciens*. *International Journal of Peptide and Protein Research*. 122-128.

Patents

International granted: 3 Nos.

National granted/filed - 5 Nos.

Technologies released to Industry

1. Process know-how for the production of soy protein hydrolysate – 4 Nos
2. Moringa seed protein isolate as flocculant – 3 Nos.

Process ready for commercialization

1. Process for the preparation of stabilized edible rice bran.

Research Projects- Team member

1. Development of processes for production of nutritional and functional ingredients of therapeutic value and their impact on physiological process, (MLP 087)
2. Niche food processing technologies for outreach of cost effective, safe, hygienic, nutritious and health food to the target population (SIP 002).
3. Structural insights towards understanding (a) the immunogenicity of small molecular weight proteins and (b) hypocholesteromic and anorectic activity of peptides (MLP 077)
4. Studies on enzymatic hydrolysis of four different types of proteins (SSP 135).
5. Studies on characterization of peptides obtained from protein hydrolysates (SSP 0150)
6. Development of functional foods and assessing the bioavailability of micro and macro nutrients (NNP 029)
7. Functional role of storage proteins and their utilization in product development with focus on their surface and inherent properties (MLP-021)
8. Development of polysaccharide based fat substitutes and their use in Indian food products (GAP 272)
9. Antinutritional factor analysis of cereals (CNP 221)
10. Production and availability of food grade soy meals in the market(GAP 147)
11. Utilization of proteins from inexpensive sources for enhancing surface properties (GAP 101)
12. Peptides from oilseeds (MLP 1402)
13. Scale up studies for process for (a) edible quality flour from groundnut and soybeans (b) protein hydrolysates from slaughter house wastes (MLP 1109)
14. Amino acid profiles of beverage based super granules (CNP 106: 212)
15. Peptides of commercial importance - Bioactive Biopeptides(MLP 1004)

16. Protein hydrolysate preparation from selected oilseed proteins for high functionality and use in speciality foods (MLP 0042)
17. Total technology for processing of safflower seeds (OLP 004)
18. Interaction of specific ligands with proteins, enzymes of oil bearing raw materials. Studies on determinants of protein structural stability. (FC/18/107)
19. Biophysical studies on the industrially important enzymes and proteins. (FT/512)

Papers presented in Symposia/conferences – 41

1. Monica, Chakravarti A ,Radha C (2023) Structural, functional, and digestibility characteristics of modified yellow-pea starch. ICFoST, 5th - 7th January 2023, Thiruvananthapuram, Kerala
2. Radha Cheruppanpullil (2019). Isolation of biomolecules from *moringa oleifera* seeds and studying its health benefits (2019). 1st DBT-Bio-CARe Conclave: Women Scientists Achieving Great Heights, organized by Department of Biotechnology and National Institute of Plant Genome Research, March 8-9, New Delhi.
3. Juhi Aggrawal, Aswath Kumar, K., Indrani, D. and Radha, C. (2018). Preparation and Nutritional evaluation of moringa seed cookies. IFCON 2018, CFTRI, Mysore.
4. Palak Daga, Ayushi Dalmia, Mohamed Naseef KK, Ajay W Tumaney and Radha C (2016) Pea protein isolate : Process optimisation and functional characterization. SBC., Nov. 21-24, CFTRI, Mysore.
5. Swetha, M.P., Radha, C. and Muthukumar, S.P. (2016). Anti-hypercholesterolemic effect of defatted moringaoleifera seed cake polyphenolics. IDACON, Sept 23-25, Mumbai.
6. Janhavi, P, Radha, C. and Muthukumar, S.P. (2016). Development of non-invasive dietary hypertension in rats – Our experience. LASA 2016, Oct. 14-15, Bangalore.
7. Anudeep, S., Poornima, S. and Radha, C. (2016). Preparation, characterization and ACE inhibitory activity of Moringa seed protein hydrolysate. SBC, Nov. 21-24, CFTRI, Mysore.
8. Janhavi, P., Muthukumar, S.P. and Radha, C. (2016). In vivo antihypertensive therapeutic effect of moringa seed protein hydrolysage in fructose induced hypertensive rats. SBC, Nov. 21-24, 2016, CFTRI, Mysore.
9. Swetha, M.P., Radha, C. and Muthukumar, S.P. (2016). Bioavailability of defatted moringaoleifera seed cake bound polyphenols in Wistar rats. SBC., Nov. 21-24, CFTRI, Mysore.
10. Kishan R. Bharadwaj, Ankit Jain, Anand K. Parande, Radha C. (2016) Moringaoleifera seed protein purification and development of water purification system. Biosangam - International conference of translational Biotechnology, Feb 4-6, 2016, Motilal Nehru National Institute of Technology (MNNIT), Allahabad, UP

11. Swetha M.P, Radha C., Muthukumar S.P (2015) *In vitro* bioaccessibility and *in vivo* bioavailability of defatted moringaoleifera seed cake polyphenols. 48th Annual nutritional conference on Indian Dietetic Association – Nutrition in Transition –A Global Challenge. Nov. 19-21, 2015, Bengaluru
12. Ankit Jain, Radha, C, Subramanian, R (2014) Functionality of moringa seed protein isolate. ICFOST XXIII, Dec.13-14, 2014 NIFTEM, Haryana
13. Shruti Adya., Sandanamudi Anudeep, Prasannakumar, V and Radha, C (2014) Isolation, Purification and immunomodulatory effects of Moringa seed glycoprotein. CARBO XXIX Conference, Dec.29-31, 2014, Mohali, Punjab
14. Swetha, M.P., Radha, C. and Muthukumar, S.P. (2014) Identification and quantification of polyphenol profile from defatted Moringaoleifera seed cake and *In vitro* gastric simulation for measuring its bioaccessibility. 46th Annual National conference of Nutrition Society of India, Nov. 6-8, 2014, Dayanand Medical college and Hospital, Ludhiana, Punjab.
15. Ankit Jain, Manohar, B., Subramanian, R. and Radha, C. (2013). Factors influencing protein extractability from *Moringaoleifera* seed and optimization using Response Surface Methodology. IFCON, CFTRI, Mysore, Dec.18-21.
16. Anudeep, S. and Radha, C. (2013). *Moringaoleifera* seeds as a potential source of dietary fibre and functional oligosaccharides. IFCON, CFTRI, Mysore, Dec.18-21.
17. Swetha, M.P., Radha, C. and Muthukumar, S.P. (2013). Comparison of nutritional and polyphenol profile of Ridge guard peel and defatted *Moringaoleifera* seed cake. IFCON, CFTRI, Mysore, Dec.18-21.
18. Ankit Jain, Subramanian, R. and Radha, C. (2013). Moringaoleifera seed protein concentrate preparation using membrane technology. Colloquium on Food Engineering, Present status and future possibilities, CSIR CFTRI, Mysore, 6-8-2013, pp. 18.
19. Ankit Jain, Subramanian, R. and Radha, C. (2012). Hofmeister ions influence on extractant salt selection and protein isolate preparation from *Moringaoleifera* seed. Poster presented at ICFoST 2012. CFTRI, Mysore. December 6-7, 2012.
20. Govardhansingh, Pradeep, S. Negi and Radha, C. (2012). Antioxidant and antibacterial activities of free and bound phenolic extract of defatted Moringaoleifera seed flour. Poster presented at ICFoST 2012. CFTRI, Mysore. December 6-7, 2012.
21. Urvashi Sahu, Domendra Dhruw, Radha, C. and Muthukumar, S.P. (2012). Safety evaluation of debittered deoiled Moringaoleifera seed powder. An acute study. Poster presented at Jnanarjana 2012, National Conference on Bioactive compounds and therapeutics. The oxford college of science, Bangalore, February 27-28, 2012.
22. Radha, C. and Maya Prakash (2012). Preparation of groundnut protein isolate by membrane ultrafiltration and its characterization, ICFOST 2012, Pune, January 2012.

23. Indu, V. and Radha, C. (2011). Antioxidant activity of polyphenolics from groundnut (*Arachis hypogaea*, L.). 8th Annual meeting of the SBC, CSIR-CIMAP, Lucknow, 12-15 November 2011.
24. Ogunsina, B.S., Radha, C., and Indira, T.N. (2010). Nutritional perspectives in the utilization of *Moringa oleifera* seeds. 1st National Summit on Moringa development. *Moringa oleifera*: A national crop for economic growth and development. Raw Materials Research and Development Council, Nigeria. 7-8th December, 2010
25. Ogunsina, B.S., Indrani, D. and Radha, C. (2010). New perspectives in the utilization of *Moringa oleifera* seeds for local enterprise: Development of value added baked foods. International Conference on African Women and Rural Enterprise (AWARE) at Obafemi Awolowo University Conference Centre, Ile-Ife, Nigeria. Jan 25-29th, 2010,
26. Nagashree, N.A., Amit Kumar Das, Sakhare, P.Z., Sridevi A Singh, Lalitha R. Gowda, Radha, C., Bhaskar, N. and Appu Rao, A.G. (2008). Protein hydrolysates from chicken liver: Comparison of acid and enzymatic hydrolysis. 77th Annual Session and Symposium of the National Academy of Sciences, India. Novel Approaches for food and Nutritional Security, CFTRI, Mysore, Dec.6-8, 2007.
27. Radha, C., Leelavathi, K. and Prakash, V. Nutritionally improved saltine crackers using autoclaved soy flour. 77th Annual Session and Symposium of the National Academy of Sciences, India. Novel Approaches for food and Nutritional Security, CFTRI, Mysore, Dec.6-8, 2007.
28. Bhaskar, N., Benila, T., Radha, C., Reshmi, H.N. and Lalitha, R.G. Optimization of conditions for hydrolysis of fish processing waste with alcalase. 18th ICFOST 2006, Nov. 16-17, Hyderabad, India.
29. Radha, C, Leelavathi, K and Prakash, V. Effect of incorporation of defatted soy flour on the quality of saltine crackers. 36th Annual meeting of Nutrition Society of India, CFTRI, Mysore, 5-6 November 2004.
30. Radha, C. and Prakash, V. Heat induced alterations of the surface properties of soy protein. Poster presented in 5th International Food Convention, CFTRI, Mysore, 5-8 December 2003.
31. Radha, C. and Prakash, V. Tailoring vegetable proteins for desired functional attributes- A case study of soy protein. Poster presented in Dupont-CFTRI Colloquium on plant proteins. March 2003.
32. Richa Sinha, Radha, C., Jamuna Prakash and Purnima Kaul. Enzymatically hydrolyzed whey protein concentrate - Functional properties and beverage formulations. Poster presented in 15th Indian Convention of Food Scientists and Technologists, CFTRI, Mysore, December 2002.
33. Radha, C. and Prakash, V. Physical and enzymatic modification of soy flour for its use as a better functional ingredient. Poster presented in 15th Indian Convention of Food Scientists and Technologists, CFTRI, Mysore, December 2002
34. Radha, C. and Prakash, V. Effect of enzymatic modification on the Trypsin inhibitor activity of soybean flour. Poster presented in Society

- of Biological Chemists Symposium, Osmania University, Hyderabad, December 2001.
35. Anuradha S. Nambiar and Radha, C. Effect of detergents and enzymes on foaming capacity of proteins from vegetable sources. Poster presented in Colloquium on Vegetable Proteins, CFTRI, November 2001.
 36. Radha, C. and Prakash, V. Effect of physical and enzymatic modification on the trypsin inhibitor activity of soybean flour. Poster presented in Colloquium on Vegetable Proteins, CFTRI, November 2001.
 37. Radha, C. and Prakash, V. Preferential interaction of cosolvents with α -globulin, the major protein fraction from Sesame (*Sesamum indicum*, L.). Poster presented in International Food Convention (IFCON-98), CFTRI, September, 1998.
 38. Sahu, R.K., Radha, C. and Prakash, V. Effect of sorbitol on the solubility and stability of α -globulin from *Sesamum indicum* L. seeds. Poster presented in society of Biological Chemists symposium, Jawarhalal Nehru University, New Delhi, Dec. 1998.
 39. Radha, C. and Prakash, V. Stabilization of the structure of alpha-globulin, the major protein fraction from sesame (*Sesamum indicum*, L.) seed. Institute of Food Technologists, Annual Meeting, June 1995, Los Angeles, California, USA.
 40. Radha, C. and Prakash, V. Influence of structure stabilizing solvents on the structural solubility of alpha-amylase. Poster presented in International Food Convention, AFST, September 1993, Mysore.
 41. Rajendran, S., Radha, C. and Prakash, V. Mechanism of solvent induced stabilization of alpha-amylase from *Bacillus amyloliquifaciens*. Institute of Food Technologists Annual meeting, July 1993, Chicago, USA
