

1. Name : **Dr.T.V,Sankar**
2. Date of Birth : 14-09-1961
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1. Academic Qualifications

Level	Degree	University/ Institute	Year	Subject(s) with major field	Fellow ship/ Scholar ship	Grade / Division / Grade / Marks	Rank/ Medal/ Award
Graduation	B.Sc	Madras University / PSG College of Arts & Science, Coimbatore	1981	Biochemistry	--	First class	--
Masters	M.Sc	Madras University / PSG College of Arts & Science, Coimbatore	1983	Biochemistry	--	Grade Point Average: 4.62/6.00	2 nd Rank
*PhD	Ph.D - Marine Science	Cochin University of Science and Technology Cochin	2001	Fish Processing & Biochemistry			
Post graduate diploma in Technology Management in Agriculture	PGDTMA	University of Hyderabad	2013	--		Distinction	

Title of Ph.D Thesis :

Biochemical and Storage Characteristics of Myofibrillar protein (*surimi*) from freshwater major carps

2. Employment Record

Designa- tion	Pay Scale/ Pay Band with Grade Pay/Research Grade Pay	Nature of work	Organization	Institution & Place of posting	Period (From-To)	Actual Duration (Years & Months)
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Head of Division	PB-4 Rs.37400-	Research Management, Research & teaching	Division of Quality Assurance & Management CIFT, Cochin / ICAR	Central Institute of Fisheries Technology, Cochin - 29	28 September 2010 – till date	3 years 6 months
Principal Scientist	PB-4 Rs.37400-	Research & teaching	CIFT, Cochin / ICAR	Central Institute of Fisheries Technology, Cochin - 29	1st Jan 2009 – till date	5 years 3 months
Senior Scientist & Head In-charge	12000 – 420-18300	Research Management, Research & teaching	Biochemistry & Nutrition Division, CIFT, Cochin / ICAR	Central Institute of Fisheries Technology, Cochin - 29	From 01-04-2007 to 01-04-2009	2 years
Senior Scientist	12000 – 420-18300	Research & teaching	CIFT, Cochin / ICAR	Central Institute of Fisheries Technology, Cochin - 29	2001 – 31 December 2008	9 years 11 months
Scientist Selection Grade	Rs. 12000 – 420-18300	Research	ICAR	Central Institute of Fisheries Technology, Cochin	1998 - 2001	3 years
Scientist Senior Scale	Rs. 10000 - 15200	Research	ICAR	Central Institute of Fisheries Technology, Cochin	1992-1998	6 years
Scientist S-1		Research	ICAR	Biochemistry & Nutrition division, CIFT, Cochin	1990 -1992	2 years
Scientist S-1		Research	ICAR	Research Centre of CIFT, Veraval	April 1985 – April 1990	5 years
Scientist S-1		Research	ICAR	Biochemistry & Nutrition Division, CIFT, Cochin	December 1984 – April 1985	4 months

3. Trainings attended in the relevant field of specialization

Title	Duration	Institution	Year
1. MDP on Leadership development (Pre RMP cadre)	26 November to 7 December 2013	National Academy of Agricultural Research Management, ICAR, Hyderabad	2013
2. Internal Auditor Training Course for Auditing of Quality Management System conforming to ISO 9001-2008 based on ISO 19011-2011.	03-04 January 2014	IBIS Management System, Chennai	2014
3. Workshop on creating awareness about codex Principles & procedures	16-09-2013	Food Safety & Standards Authority of India, New Delhi organised at Cochin	2013
4. National Seminar on 'Food Safety- Role of Standards'	12 December 2012	Bureau of Indian Standards, New Delhi	2012

5. Lead Auditors Course on FSMS IS/ISO 22000	03-07 January 2011	National Institute of Training, Bureau of Indian Standards (BIS), Noida.	2011
6. Nominated by DG, ICAR to attend the Food safety course	22 -25 August, 2011	Workshop organised by the Cornell University and Sathguru at Hyderabad	2011
7. MDP Workshop on Policy and prioritization, Monitoring and Evaluation (PME) support to Consortia-based research in Agriculture	1-6 July 2010	National Academy of Agricultural Research Management, ICAR, Hyderabad	2010
8. Leadership for innovation in Agriculture under NAIP	19 – 23 January 2009	National Institute of Agricultural Extension Management (MANAGE), Hyderabad	2009
9. Implementation Course on Lab Accreditation by NABL under IS/ISO/IEC 17025:2005	2-3, May 2006	Consultancy Development Centre (CDC), Ministry of Science & Technology, New Delhi	2006
10. Laboratory Assessors Training course	2-6 May 2005	National Institute of Training & Standardization, Bureau of Indian Standards, Noida Organized by National Accreditation Board for Testing & Calibration of Laboratories (NABL), New Delhi	2005
11. Laboratory Quality System & Internal Audit as per ISO/IEC 17025	4 days, 04-07, October 2004	Indian Institute of Quality Management, Jaipur, organized by National Accreditation Board for Testing & Calibration of Laboratories (NABL), New Delhi	2004
12. Recent Advances in Agricultural Research Management	21 days Summer School, 15, April 5, May 2002	National Academy of Agricultural Research Management, ICAR, Hyderabad	2002
13. Site directed mutagenesis	15 days; 02 to 19 March 1993	International centre for genetic Engineering and Biotechnology (ICGEB), New Delhi	1993
14. Agricultural Research Management	5 months	National Academy of Agricultural Research Management, ICAR, Hyderabad	1985

4. Experience in Relevant Field

Details of 5 most significant contributions

(i) *Development of Myofibrillar protein (surimi) concentrate from freshwater fishes*

Surimi or myofibrillar protein concentrate is a mechanically deboned minced fish, washed to remove blood, fat, soluble and other odoriferous substances and stabilised by the addition of cryo-protectants. Developed a method for the preparation of *surimi* from freshwater major carps (rohu, catla and mrigal). The yield, changes during preparation, storage stability and other related characteristics were studied. It is a concentrated myofibrillar protein having great potential as a protein ingredient with specific properties, which make them suitable for the preparation of a number of fabricated food products

(ii) Development of Collagen - Chitosan membrane

Associated with development of Collagen – Chitosan membrane. Collagen – Chitosan membrane is derived from collagen from air bladder and chitosan from prawn shell waste. The films have good haemostatic and healing properties, good ability for guided tissue generation, bioabsorbability and is non antigenic in nature. It has been used for the first time in periodontal GTR applications. The technology has been extended to two entrepreneurs. A project with private participation has been submitted to DST for commercialization.

(iii) Isolation of Taurine from fish waste

A technology has been perfected to isolate and purify taurine an amino acid of non protein origin from fish waste. Taurine roughly forms about 40% of free amino acid pool and 20 % of Non protein nitrogen. The method of extraction and separation on the principles of chromatography provides an ideal technology for the preparation of a bioactive compound from fish waste. The product is one of the commercialisable technology from CIFT.

(v) Technology for Encapsulation of PUFA

Polyunsaturated Fatty Acids (PUFA) concentrated by the technology developed by CIFT has been successfully encapsulated. The PUFA, which is concentrated to the extent of 70%, is a ready source of essential fatty acid as nutraceutical. The product is one of the commercialisable technologies from CIFT.

e) Functional Properties of Fish proteins

Functional properties of fish proteins is an important area of basic research as proteins play significant role in the application for the fish. The functional properties of proteins from Indian fishes, from marine, brackishwater, Freshwater and deep-sea environment, was carried out in a systematic way and documented. The properties are usually altered by external parameters as well as inherent characteristics. The results are documented as a report to ICAR. Thirteen research publications were made from the results which includes – 4 international publication, 3 national publications and 6 publications in Symposia and Conferences. Based on the results a chapter on fish proteins was published in the book entitled ‘Advances in Harvest and Post-Harvest Technology of Fish, Nambudiri, D.D. and Peter, K.V. (eds). New India Publishing Agency, New Delhi (India). List of publications given under the respective heads.

5. Recognitions

Items of Recognition	Year	Awarding Organization (National/ International, Institutional/Professional Society/ Academy)
National Assessor for Food Testing Laboratories Endowment Award	Since 2006	National Accreditation Board for Testing & Calibration Laboratories (NABL)
Dr. K.Ravindran Endowment Award for Best Scientific Paper Award for the publication entitled, ‘Isolation of squid chromatophores and its commercial application as a natural pigment in lipsticks, Femeena Hassan, Muhamed Ashraf, P. Geethalakshmi, V and Sankar, T.V.	2012	Swadesi Science Congress held at Kasaragod during 6-8, November, 2012
Best paper Award-2010 for the paper entitled, ‘Effect of Thermal modification on Physicochemical and functional	2010	Society of Fisheries Technologists India, Cochin

properties of Myofibrillar protein from Tilapia, Oreochromis mosambicus Peters, 1852”

Policy Making Bodies

Principal Member	Since 2011	Fish and fisheries products sectional committee - FAD 12 , Food & Agriculture Division, Bureau of Indian Standards (BIS) , New Delhi
Principal Member	Since 2011	Food hygiene, safety management & other systems sectional Committee- FAD 15 , Food & Agriculture Division, Bureau of Indian Standards (BIS) , New Delhi
Principal member	Since 2012	Committee on Biological Hazards, Food Safety Standards and Authority (FSSAI), New Delhi

Professional Societies

Life Fellow	Since 2012	Society of Fisheries Technologists (India), Cochin - Professional society
Life Corporate Member	2004 - 2012	Society of Fisheries Technologists (India), Cochin - Professional society
Life Member	since 1984	Society of Biotechnologists (India), Cochin, Kerala Professional society
Treasurer	From 1998 – 2006	Society of Fisheries Technologists (India), Cochin - Professional society
Secretary	From 2009 till date	Society of Fisheries Technologists (India), Cochin - Professional society

Member, Indian Delegation

1. Regional Expert Group Workshop on <i>Transboundary Aquatic Animal Health Issues in the Bay of Bengal</i> , organized by the Bay of Bengal Large Marine Ecosystem (BOBLME) Project and the Network of Aquaculture Centres in Asia-Pacific (NACA) on 3-4 November 2011 Bangkok, Thailand.	Thailand	2011	International
2. Indian Delegation for participating in the <i>7th Plenary meeting of ISO/TC 234 and associated Working Group and Advisory Group Meetings</i> , held during 28-29 October 2013 at Cochin, India	India	2013	International Individual
Member, Management Committee Meeting, Central Institute of Brackish water Aquaculture	ICAR	Since 2010	Individual

(CIBA), Chennai			
Member, Management Committee Meeting, Central Institute of Fisheries Technology, Cochin	ICAR	Since 2013	Individual

6. Special Attainments & Achievements of Practical Importance (patents, technologies, varieties, products, concepts, methodologies etc.)

Category	Title	Year	Individual/ Collaborative	Additional Details/Information
Patents	<i>Eichronia crassipes</i> root extract as analgesic, antipyretic, antiulcer & anti-inflammatory agent for the treatment of diseases 176/CHE/2010	2007	Collaborative	Suseela Mathew, K.Ashok Kumar, R.Anandan, P.G.Viswanathan Nair, K.Devadasan, K.K.Asha, T.V.Sankar , & Sanitha
	Collagen-chitosan: An absorbable guided tissue regeneration membrane and a process for preparing the same” 4346/CHE/2011	2011	Collaborative	Dr. Suseela Mathew, Dr.Thazhakot Vasu Nambisan Sankar , Dr.Harikumar. Kanakkath
	Taurine extraction from fish head - 2825/CHE/2012	2012	Collaborative	T.V.Sankar , Abhilash, Suseela Mathew, R.Anadan, K.K.Asha and P.T.Lakshmanan
	A novel cost effective environmental-friendly depuration system for bivalves - 2831/CHE/2012	2012	Collaborative	Femeena Hassan, and T.V.Sankar
	Chromatophore based lipstick 226/CHE/2014	2014	Collaborative	Dr.Femeena Hassan, Dr.Muhamed Ashraf, Dr. Geetha Lakshmy, Dr.T.V.Sankar

07. Research

Projects handled

Title of the Project	Whether PI/CO-PI/Associate	Duration	Category	Major Accomplishments
Biochemical evaluation & utilization of fish waste	Project Leader 107.27 lakhs	3 years 2006 - 2009	Institutional	Extraction and purification of bioactive components from fish waste is being tried. Taurine a major non-protein amino acid of biological significance is being isolated in pure form; isolation of peptides of biological significance. A technology is being finalized for a high end hydrolysed product from fish waste.
Bioevaluation and purification of natural bioactive compounds of therapeutical and nutraceutical	Project Associate 65.58 lakhs	3 years	Institutional	Bioevaluation of extracts from mangroves is being carried out Large scale separation and purification of taurine is being

significance from aquatic resources				tried for possible commercialization
Assessment of microbial seafood safety hazard and bioprospecting of aquatic microbial resources for enzymes	Project Associate 201.6 lakhs	3 years	Institutional	One protease stable at high temperature and one chitinase enzymes have been purified from microbial source
Isolation, identification and characterization of natural bioactive substances of therapeutical importance from Indian waters	Project Associate 38 lakhs	4 years	Institutional	On going scheme - Isolation and purification of bioactive principles from marine mangroves is being addressed. 1 Research Paper
Toxicity induced stress on the metabolism of fish and the distribution of toxic contaminants in fish and shellfish	Project Leader 52.35 lakhs	3 years	Institutional	Chemical contaminant profile – pesticide, PAH and heavy metal residues – in fish collected from major landing centres viz., Quilon, Kochi and Calicut. The study demonstrated that some of these contaminants are present in the fish/ shellfish samples but well within limits of MRL. 2 Research Papers + 1 Full Report
Development of value added products from freshwater fish and their preservation	Project Associate	3 years	Institutional	Biochemical changes taking place during different processing conditions were studied in collaboration with fish processing division; 1 Research Paper
Isolation and utilization of bioactive substances from aquatic resources	Project Associate	3 years	Institutional	Screening of protein from different fish/shellfish Functionalities of fish protein for commercial exploitation 1 Research Paper + technologies on taurine and Poly unsaturated Fatty Acids
Nutrients, toxicants, pollutants and growth promoters in aquaculture systems and processed marine products	Project Associate	3 years	Institutional	Chemical contaminants in fish resources from Kerala coast 2 Research Papers + Methodologies for quantification of pesticides (OCP), Pylchlorobiphenyls & tetracycline
Studies on the effect of preprocessing conditions on frozen storage characteristics of important varieties of fishes of Saurashtra coast	Project Associate	5 years	Institutional	The effect of processing conditions particularly delay in icing was studied in different fishes of Saurashtra coast. Necessary inputs given to the processing industry through periodical visits to the industry. 2 Research Papers

Studies on the technological problems of commercial curing of important varieties of fishes of Saurashtra coast	Project Associate	5 years 1985-1990	Institutional	The quality aspects of dry fish available along the coast were evaluated; appropriate laboratory production was carried out for comparison and advises given. 1 Research Paper
Studies on the effect of different processing methods, additives and preservatives on spoilage and pathogenic bacteria in fish and fishery products.	Project Associate	4 years upto 2013	Institutional	Different processing methods and additives on the quality aspects with special reference to food safety was covered
Development of Quality Index Method for Commercially important Indian Fishes	Project Leader	2011- 2015	Institutional ongoing	Quality Index scheme for Indian mackerel completed. Index for brackish water fish <i>Etroplus suratensis</i> is being carried out
Risk assessment of emerging food borne pathogens and chemical residues in aquatic systems.	Project Associate	2013 - 2016	Institutional Institutional ongoing	Different practices in both aquaculture and other general practices and the association of hazards with fish was evaluated; risk analysis studies are addressed.

Sponsored/ Externally funded

Functional properties of protein from marine, brackish water, fresh water and deep sea fish of India	Principal Investigator 5.8 Lakhs	3 years	ICAR Ad-hoc Project	Composition and conformational and functional characteristics of about 60 fish species from different habitat were documented. The effect of different extrinsic and intrinsic factors affecting the conformation as well as functionality of fish protein also studied 8 Research Papers + 1 Full Report
Isolation, characterization and immobilization of fish lipase for commercial applications	Co-Principal Investigator 18 lakhs	4 years	ICAR Ad-hoc Project	Lipases isolated from hepatic and intestinal tissues of freshwater and marine fish were purified, characterized and analysed for their specificity. Purified enzyme immobilized with chitosan and polyacrylamide. 1 Full Report
National Risk Assessment programme for fish and fish products for domestic and international market'	Co-Principal Investigator 48.19 of 164.76 Lakhs	3 years	ICAR Network Project	Chemical contaminant profile of selected fish and fish products meant for internal marketing was carried out 1 Research Paper + 1 Full Report
Responsible Harvesting and Utilisation of	Co-Principal Investigator	3 years from Nov	National Agricultur	mercialisation of technologies developed at CIFT for utilization

Selected Marine Small Pelagics and Freshwater Fishes	9.74 crores	2007	al Innovative Project funded by World Bank	of small pelagics in post harvest sector 2 Products for commercialization (Encapsulated omega-3 fish oil + ready to cook fish products)
Assessment of myctophid resources in the Arabian sea and development of Harvest and post-harvest technologies	Co-Principal Investigator 183.4 Lakhs	5 years from Nov 2007	Centre for Marine Living Resources (CMLRE)	Biochemical evaluation of myctophid resources 3 Research Paper
Nutrient profiling and fish as dietary supplement	Co-coordinator & Principal Investigator 81 lakhs of 528 lakhs	4 years From 2009 to 2012	ICAR Outreach activity project	Nutrient evaluation of fishes from different habitats Composition analysis of selected fishes from marine environment Survey on fish consumption pattern in Kerala & Gujarat Training of Co-Principal Investigators and Contractual Technical Assistants in sampling and experimental methods
Characterisation of Harmful algal bloom along Indian coast	Co- Principal Investigator 80 lakhs	2012-17	Centre for Marine Living Resources (CMLRE)	New Project – Main objective: Extraction, purification and characterization of HAB from marine resources as well as profiling the sensitive zones along the Indian coast.

8. National / International Research Assignments

<i>Details</i>	<i>Year(s)</i>	<i>Accomplishments</i>	<i>Individual / Collaborative</i>
Quality of dry fish from Saurashtra coast	1988	A benchmark on the quality of dry fish from Gujarat coast was carried out.	Individual
National Risk Assessment programme for fish and fish products	2003-2006	Chemical contaminant profile of selected fish and fish products meant for internal marketing was carried out	Collaborative
Functional properties of muscle proteins from Marine, brackish water, freshwater and deep sea fishes of India	2004-2008	A data base of functional properties of commonly available commercial fishes was generated which will provide useful information to the industry as the academicians for further research and for product development	Individual
Nutrient profiling and fish as dietary supplement - ICAR Outreach activity project	2009-2012	Nutrient evaluation of fishes from different habitats; Survey on fish consumption pattern in relation to health	Collaborative

9. Monitoring of physical and financial targets, documentation, special assignments etc.

Chairman, HRD Committee	2012	Functioning as Chairman, Human Resources Department since 2008. Conducted periodical meetings and facilitated the capacity
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In-charge, Institute Technology Management Unit (ITMU)	2012	building of different sections of the staff of the institute. Functioned as incharge, ITMU, during 2009-2012. Facilitated the transfer of technologies/consultancy services like solar Dryer, diagnostic study for the development of a Clam cluster, setting up of a PCR-Lab, renewal of HACCP certification along with the respective divisions
Member Secretary, Institute Research Council (IRC)	2008-11	Functioned as Member Secretary, Institute Research Council (IRC) during 2008- 12 period. Periodical conducting of Institute Research Committee and bringing out proceedings and helping the Director in evaluating the work by individual scientists.
Member of Institute Animal Ethics Committee	Since 2006	As chairman of the Animal Ethics Committee, carried out the requirements with reference to the norms. As member of the committee facilitated the work at the division in accordance to the requirements and contributed to the effective implementation of the reuiremetns of the committee
Quality Manager, Quality management System as per ISO/IEC 17025	Since 2006	The analytical services of the institute is taken over by the QAM division. As Quality Manager (Self) of the Quality management System as per ISO/IEC 17025:2005, the division is responsible for the sample collection, distribution, collection of results and distribution/dispatch of results to the customers. As head (Quality Manager) of the quality management system, self along with Technical Manager and the NABL secretariat streamlined the analytical services in a best possible way and are responsible for the desktop/surveillance audit of the quality system periodically by the NABL, New Delhi.
Chairman & Member, Institute animal ethics Committee	Since 2002	Functioned as both member and chairman of the committee and monitored the animal experiments carried out in the institute in recoomeded manner
Co-Convener, ICAR South Zone Inter Institutional Sports	2001	Orgained the ICAR interinstitutiona (South Zone) Sports along with the Convenor of the programme. Over 25 ICAR institutes from South Zone participated and 10-12 events and athletics were conducted
Organising Secretary, ICAR South Zone Inter Institutional Sports	2009	Orgained the ICAR interinstitutiona (South Zone) Sports. Over 25 ICAR institutes from South Zone participated and 10-12 events and athletics were conducte
Member Official side, Institute Joint Staff Council (IJSC)	2008	Supported the Director in dealing with the issues and solutions were taken amicably for the bbenefit of the staff without compromising the official responsibility.
Member Review committee, Institute Joint Staff Council (IJSC)	2008	Appropriate action was taken in getting the issues settled after discussing with the staff side.

10. Summer/Winter School/Refresher Course/Symposia/Conference etc.

Name of the programme organized	Function(s) performed	Title	Year	Duration	Funding agency
Winter school					
Winter school	As Course coordinator & Faculty	Modern techniques for the analysis of fish & fish products	2005	21 days	ICAR
International Symposium					

International Symposium	Member, Organising Committee & Treasurer of Society of Fisheries Technologists (India), Cochin	Remote Sensing and Fisheries	2010	3 days	CIFT, SOFTI and SAFARI at Cochin
International Symposium	Convener	International Symposium on Greening Fisheries: towards green technologies in Fisheries	2012	3 days	CIFT&SOFTI at Cochin, 21-23 May 2013
National Seminar/Symposium					
Seminar	Member organizing Committee & Treasurer, SOFTI, Cochin	Riverine & Reservoir Fisheries of India	2002	3 days	Society of Fisheries Technologists (India), Cochin
Seminar	Member, Organising Committee, Treasurer of SOFTI, Cochin	Fishing & Fish processing industries of Gujarat – Present status & future needs	2003	1 day	Society of Fisheries Technologists (India), Cochin at Veraval
Symposium	Member organizing Committee & Treasurer of SOFTI Cochin	Seafood Safety- Status & Strategies	2003	3 day	Society of Fisheries Technologists (India), Cochin at Veraval
Seminar	Member organizing Committee & Treasurer of SOFT(I)	Sustainable Fisheries Development- Focus on Andhra Pradesh	2003	1 day	Society of Fisheries Technologists (India), Cochin at Visakhapatnam
Seminar	Co-Convener	Biomedical applications of chitosan	2007	1day	Organized jointly by Matsyafed & CIFT at CIFT, Cochin
Seminar	Co-convener	Harvest & Post harvest technology for Tuna	2008	1 day	Organized jointly SOFTI & CIFT at CIFT, Cochin
National Seminar	Co-Convener & Secretary, Society of Fisheries Technologists (India), Cochin	Conservation & Sustainability of coastal living resources of India (Conservefish 2009)	2009	3 days	CIFT & SOFTI in association with COES, New Delhi, CMFRI and NIO at Cochin
National Seminar	Co-Convener & Secretary, Society of Fisheries Technologists (India), Cochin	National Seminar on Traditional Knowledge and Management Systems in Fisheries – Fiskfolk2012	2012	2 days	CIFT & SOFTI in association with BOBP, Chennai

11. Paper presentation in an International event

(presented by the person who represented CIFT in the event)

<i>Country</i>	<i>Event</i>	<i>Year</i>	<i>Author(s)</i>	<i>Paper presented</i>
India	10th Indo-Pacific Fisheries	1995	Raghunath, M.R.,	Changes in <i>in vitro</i> and <i>in</i>

	Commission, Cochin		Arnmu, K., Sankar, T.V. and Devadasan, K.	<i>vivo</i> digestibility of mackerel upon curing and drying
Sri Lanka	Asia Pacific Fisheries Commission. 10th session of the Working Party Meeting on Fish Technology and Marketing, Colombo	1997	Sankar, T.V. , Antony, P.D. and Gopakumar, K.	Changes in Sardine lipids during brining
Sri Lanka	Asia Pacific Fisheries Commission. 10th session of the Working Party Meeting on Fish Technology and Marketing, Colombo	1997	Ramachandran A. and Sankar, T.V	Storage behaviour of semi- dried Dhoma cake in different relative humidifies
China	Fish Utilisation in Asia and the Pacific. APFIC Symposium, Beijing	1998	Sankar, T.V. and Ramachandran, A.,	Utilisation of fresh water Catla (<i>Catla catla</i>) for preparation of mvofibrillar protein concentrate
China	Fish Utilisation in Asia and the Pacific.APFIC Symposium, Beijing	1998	Ramachandran, A and Sankar, T.V.,	Processing and frozen storage characteristics of ray fillets, Fish Utilisation
India	7th Asia Pacific Marine Biotechnology Conference, Cochin	2006	Mukund Mohan, Dhanya Ramachandran, T V Sankar and R. Anandan	Physico chemical charecterisation of muscle proteins from different regions of mackerel (<i>Rastrelliger kanagurta</i>)
India	8th Asian Fisheries Forum, Cochin	2007	T. V. Sankar, Mukund Mohan, Dhanya Ramachandran and R. Anandan	Physicochemical characteristics of muscle proteins from selected marine fishes of west coast of India

12. Invited lecture/ Chairman of session etc.

Event	Category	Year	Topic	Organised By
Food Safety Technology- Seminar series 2013-14	Chairman	7 January 2014	<i>Food risk challenges in developing countries</i>	Shimadzu & CIFT, Cochin
Symposium on Seafood Safety: Status and Strategies	Lead talk	2002	<i>'Pesticide and polychlorobiphenyls in seafood'</i>	Society of Fisheries technologists (India), Cochin during 28 -30 may 2002
UGC sponsored refresher course for college teachers	Invited talk	28-01-2014	<i>Food safety & Health</i>	UGC- Acedemic Sataff College, University of Kerala, Trivandrum
National Symposium on Prospects & Advances in Biotechnology & Bioprocess Engineering	Invited talk	01-08-2013	<i>Applications of biotechnology & bioprocess engineering in food quality control</i>	Dept of Biotechnology & Biochemical Engineering, Sree Buddha College of Engineering, Pattoor, Pandalam, Alappuzha.
UGC sponsored National Seminar ' Fiid Safety: concerns & issues'	Guest speaker	4 th October 2013	<i>Food Safety: An important slogan for consumers</i>	Dept. of home Sciences, St. Theresa's college, Ernakulam
Winter School ' ICT oriented strategic extension for esponsible fisheries Management	Invited talk	19-11-2013	<i>Food Safety Issues with special reference to Seafood</i>	CMFRI, Cochin

UGC sponsored Seminar on, Emerging Trends in Aquaculture, Harvesting and Post harvesting technology,	Invited talk	7-8 March 2012	<i>Food Safety for fish and fishery products</i>	Mar Thoma College, Tiruvalla, Kerala
Seminar on ‘Risk assessment and mitigation in microbial monitoring in seafood industry’	Guest Speaker	6 June 2012	<i>Food Safety Regulations with reference to fish & fish products</i>	Merck Millipore, Cochin
Sasthra 2011	Invited talk	13 Jan 2011	<i>‘An insight in to the Foundations of Life’</i>	Rotary club of Cochin Lords and The Kerala Science and Technology Society (India) at Campion School
Scientists of Regional Chemical Examiner’s Laboratory	Invited talk	13 May 2011	<i>‘Application of GC-MS in Forensic Chemical Examination’</i>	Institute of Management in Government, Kakanad, Ernakulam
National Seminar on Indian Seafood Trade – Concerns & Adaptive Strategies	Invited talk	June 30, 2011	<i>‘Emerging Quality Concerns vis-à-vis rejections of Indian seafood’</i>	Jointly organized by The Society of Fisheries Technologists’ (India) and the Central Institute of Fisheries Technology at CIFT, Cochin
World Heart day	Invited talk	on 28 September 2011	<i>‘Food Safety & Heart Disease’</i>	Malabar Cultural Association and Moosakunhi Heart Foundation in association with Cochin Corporation at Town Hall, Ernakulam
Biovision 2009, International Symposium on Marine Biotechnology	Invited talk	1-3 October 2009	<i>An overview on PUFAs and its health significance</i>	Department of Biotechnology (Engg.), Sahrdaya College of engineering and Technology, Kodakara, Trissur
National Seminar on ‘Bioactive compounds from Marine organisms	Invited talk	2008	<i>Bioactive compounds- Methods of Analysis’</i> at the	organized by School of Marine Sciences, Cochin University of Science & Technology, Cochin, during 14-15 March 2008
UGC- Academic Staff College, University of Kerala, Trivandrum on 18 December 2008	Invited talk	2008	<i>Biological Significance of lipids</i>	Academic Staff College, University of Kerala, Trivandrum on 18 December 2008
Winter School ‘ Impact of climate change on Indian marine Fisheries’	Invited talk	04-02-2008	<i>Biochemical changes in fish</i>	CMFRI, Cochin
On the occasion of NABL accreditation of lab	Invited talk	2007	<i>‘Awareness of ISO:17025 and the role of Internal Auditors’</i>	Sea lab, Aroor on 27, June 2007

13. Publications

PUBLICATIONS IN INTERNATIONAL JOURNALS

1. Raghunath, M.R., Sankar, T.V., Armmu ,K. and Devadasan, K., 1995, Biochemical and Nutritional changes in fish proteins during drying,. *J. Sci. Food Agric.*, 67,197 - 204.

2. Ammu, K., Raghunath, M.R., Sankar, T.V., Lalitha, K.V. and Devadasan, K., 2000, Repeated use of oil for frying fish. Effect of feeding the fried fish to rats, *Nahrung*, 44, Nr.5, S., 368 – 372.
3. Sankar, T.V. and Ramachandran, A., 2002., Rheological characteristics of suwari and kamaboko gels made of surimi from Indian major carps, *J. Sci. Food Agric.*, 82, 1021-1027.
4. Sabeena Farvin, K.H., Anandan, R., HariSenthil Kumar, S., Shinu, K.S., Sankar, T.V., Thankappan, T.K., 2004, Effect of squaline on tissue defence system in isoprotonolol induced myocardial infraction in rats, *Pharmacol Res.*, 50, 231-236.
5. Sankar, T.V. and Ramachandran, A., 2005, Thermal stability of myofibrillar protein from Indian major carps *J. Sci. Food Agric.*, 85, 4, 563-568.
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FORMULATION OF STANDARDS/ CODES OF PRACTICES ETC.

1. Dr.T.V.Sankar Dr.Ashok Kumar and Dr.Satyen Kumar panda, involved in the revision and formulation of standards, both domestic and import, for fish and fishery products for adoption by FSSAI
 - a. Revision of existing categorization of fish and fishery products
 - b. Revision of chemical hazards in fish and fishery products
 - c. Revision of microbiological hazards in fish and fishery products
 - d. Harmonization of FSSAI standards with international standards
2. Dr.T.V.Sankar, Dr. K.Ashok Kumar, Dr.A.Ramachandran and Dr. Jayashankar are involved in formulating code of practices for handling fish and fishery products, as shown below

- a. CODE OF HYGIENE PRACTICES IN THE ENTIRE SUPPLY CHAIN FOR MARKETING OF FISH AND FISHERY PRODUCTS, Part I (Fish catching to handling, storage on board and transportation to processing plants/factories and whole sale markets)
- b. CODE OF HYGIENE PRACTICES IN THE ENTIRE SUPPLY CHAIN FOR MARKETING OF FISH AND FISHERY PRODUCTS. Part II (deals with Code of Practice for safe fish handling and processing from Raw Material Receiving Station in Processing Plants/Factories to Shipment)
- c. CODE OF HYGIENE PRACTICES IN THE ENTIRE CHAIN OF CUSTODY FOR MARKETING OF FISH AND FISHERY PRODUCTS. Part III (deals with Code of Practice for safe fish and shellfish handling from Processing Factories to Retail)
- d. CODE OF HYGIENE PRACTICES IN THE ENTIRE CHAIN OF CUSTODY FOR MARKETING OF FISH AND FISHERY PRODUCTS Part IV (deals with Code of Practice for Hoteliers and Catering personnel)

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