

Dr. Kalidas Shetty is currently the Associate Vice President for International Partnerships & Collaborations and Founding Director of Global Institute of Food Security and International Agriculture-GIFSIA & Professor of Plant Science at North Dakota State University, Fargo, ND. From 1993-2012 he was a faculty as Professor to Assistant Professor of Food Science and Biotechnology in the Department of Food Science at the University of Massachusetts-Amherst. He received his BS from the University of Agricultural Sciences, Bangalore, India majoring in Applied Microbiology and MS/PhD. from the University of Idaho, Moscow, Idaho, USA in Microbiology. He then pursued postdoctoral studies in Plant Biotechnology in Japan (National Institute of Agro-Biological Sciences, Tsukuba Science City) and Canada (University of Guelph) prior to joining the University of Massachusetts Amherst in 1993 as Assistant Professor of Food Biotechnology.

In January 2013 he joined North Dakota State University in Fargo, North Dakota.

Dr. Shetty's research interests focus on critical role of cellular and metabolic basis of oxygen biology for advancing new innovations in Life Sciences and especially Agricultural and Food Innovations that advance global food security and health in a sustainable environment. His specific research interests focus on redox pathway-linked biochemical regulation of phenolic phytochemicals in food crops using novel tissue culture, biochemical, bioprocessed and fermentation systems to add value to diverse food systems. This focus is contributing to very innovative advances in the areas of crops for health, post-harvest biology, nutraceuticals, functional foods and food antimicrobial strategies as critical innovations to advance food security in addition to malnutrition and hunger challenges. In particular, he has developed an innovative "crops for health" research platform to counter diet-linked chronic diseases. The breeding and designing of crops and their food ingredients coupled to beneficial bacteria are foundations for combating chronic diseases such as type 2 diabetes and cardiovascular disease and serve as the basis of new biochemical rationale for healthy whole food design for advancing global food security and health for quality living. The rationale of this "crops for health" platform has relevance for managing malnutrition challenges from maternal to child health needs globally.

Additionally, in the context of post-harvest biology, food safety and preservation the susceptibility of bacterial food pathogens to phenolic phytochemicals at low pH (using fermented food systems) coupled through host tissue redox-linked pathways is his major interest in developing new food preservation and safety strategies and antibiotic replacement technologies with crop food ingredients coupled to probiotics. He has published over 170 manuscripts in peer-reviewed journals and over 30 as invited reviews and in conference proceedings. He holds 5 US patents. He has received Grants from United States Department of Agriculture since 1993 to support his research (average of \$ 100,000/year from 1999 to current).

Dr. Shetty is the editor-in chief of the journal "Food Biotechnology", published by Taylor and Francis). He is also on the editorial board of 4 additional journals in the areas of Food Science and Technology, including the "Journal of Medicinal Food" and "Innovative Food Science and Emerging Technologies". He has served on peer review research panels for National Institute of Health, National Science Foundation, United States Department of Agriculture and Jefferson Science Fellows Program of the National Academies & US Department of State.

In 2004, Professor Shetty was selected by US State Department as the inaugural Jefferson Science Fellow to advise on scientific issues as it relates to International Diplomacy and International Development. This program administered by the US National Academies allowed Dr. Shetty to serve as Science Advisor at the US State Department for 1 year in 2004-05 and he has continued to serve as Science Advisor for 5 more years following his return to the University of Massachusetts. Dr. Shetty has widely traveled and has been invited to present lectures and seminars in the areas of Food Biology, Eco-Biological Basis for Evolving Healthy Food Systems for Food Security & Health, Functional Foods and Dietary Phytochemicals and Food Safety in over 30 countries in Asia, Europe, and the Americas. In 1998 he was awarded the Asia-Pacific Clinical Nutrition Society Award for his contributions to the area of phytochemicals, functional foods and human health based on his understanding of Asian food traditions and traditional food systems. At the University of Massachusetts he was awarded the College of Food and Natural Resources Outstanding Teaching Award, Certificate of Achievement for Outstanding Outreach Contributions and Outstanding Research and Creativity Award.

His current passion and commitment are to develop “Sustainable and Ecological basis for Healthy Food Systems , food choices and global food security” based on local crop and food diversity, traditional food systems and effective food imports that incorporates understanding of comparative cellular biochemistry of plant and animal systems and their interactions with prokaryotes (bacterial systems). This system based integrated model and “outside the box” research platform based on cellular basis of oxygen biology of food plants and plant-microbial interactions as the basis for new and innovative Agro-Food solutions to advance sustainable basis for food security and health based on local biodiversity. This approach has potential to transform global agriculture with healthy food systems and innovative rural development strategies that is systems based with sustainable long term solutions combined with better habitat and environment, sanitation and diversified bioenergy options.

In keeping with the above focus on new innovations to advance global food security on a “crops for health and sustainability” platform he is developing close collaborations between North Dakota State University in Fargo and institutions in several regions of the world from Asia, Africa, Europe to the Americas.

#### **Awards and Scholarships/Fellowships**

- 1) Awarded **8 gold medals for academic excellence** at the University of Agricultural Sciences, Bangalore, India (1983).
- 2) **Science and Technology Post-doctoral Fellowship** of Japan government (1990-1991).
- 3) University of Massachusetts, **Lilly Teaching Fellowship** to promote and encourage promising young faculty (1995-1996).
- 4) University of Massachusetts, College of Food and Natural Resources; **Outstanding Teacher Award** (1996-1997).
- 5) **Asia-Pacific Clinical Nutrition Society Award** (1998-1999)
- 6) University of Massachusetts - College of Food and Natural Resources; **Certificate of Achievement for Outstanding Outreach Contributions**, 2001
- 7) **Jefferson Science Fellow** at the US State Department (2004-2005)

- 8) University of Massachusetts, Award for **Outstanding Accomplishments in Research and Creative Activity**, 2005
- 9) **Fulbright Senior Specialist**, Catholic University of Valparaiso, Chile, 2012

### Professional Memberships

Institute of Food Technologists  
Asia Pacific Clinical Nutrition Society  
American Society of Microbiology  
American Chemical Society  
American Association for Advancement of Sciences

### Publications

(Google Scholar H-Index-61; Research Gate H-Index-55 (53 excluding self-citations); Scopus H-Index-48; Mendeley H-Index-48 and Thomson Reuters Web of Science H-Index-40)

### Peer-Reviewed Journals

1. Shetty, K., Crawford, D. L. and Pometto, A. L. (1986). Production of L-phenylalanine from starch by analog resistant mutants of *Bacillus polymyxa*. **Appl. Environ. Microbiol.**, 52:637-643.
2. Shetty, K., Crawford, D. L., Korus, R. A., and Pometto, A. L. (1988). Amylase activity and L-phenylalanine overproduction from starch by analog resistant mutant of *Bacillus polymyxa*. **Appl. Biochem. Biotechnol.**, 17:347-355.
3. Shetty, K., Korus, R. A. and Crawford, D. L. (1989). Growth kinetics and phenolics production in *Glycine max* cell suspension cultures. **Appl. Biochem. Biotechnol.**, 20/21:825-843.
4. Shetty, K., Bothra, D., Crawford, D. L. and Korus, R. A. (1990). Extracellular peroxidase as an indicator of growth in plant cell suspension cultures. **Appl. Biochem. Biotechnol.**, 24/25:213-221.
5. Suh, H. W., Crawford, D. L., Korus, R. A. and Shetty, K. (1991). Production of antifungal metabolites by the ectomycorrhizal fungus *Pisolithus tinctorius* strain SMF. **J. Industrial Microbiol.**, 8:29-36.
6. Chein, C. T., Shetty, K., Mortimer, M. and Orser, C. S. (1991). Calcium-induced salt tolerance in *Rhizobium leguminosarum* biovar viciae strain C1204b. **FEMS Microbiol. Lett.**, 83:219-224.
7. Shetty, K. and Asano, Y. (1991). The influence of organic nitrogen sources on the induction of embryogenic callus in *Agrostis alba* L. **J. Plant Physiol.**, 139:82-85.
8. Shetty, K. and Asano, Y. (1991). Specific selection of embryogenic cell lines in *Agrostis alba* L using the proline analog thioproline. **Plant Science**, 79:259-263.
9. Shetty, K., Asano, Y. and Oosawa, K. (1992). Stimulation of *in vitro* shoot organogenesis in *Glycine max* (Merrill) by allantoin and amides. **Plant Science**, 81: 245-251.
10. Shetty, K., Shetty, G. A., Ezura, H. and Oosawa, K. (1992). Stimulation of benzyladenine-induced *in vitro* shoot organogenesis from cotyledons of *Cucumis sativa* L by proline and abscisic acid. **Plant Tissue Culture Lett.**, 9:104-108

11. Shetty, K., Shetty, G. A., Nakazaki, Y., Yoshioka, K., Asano, Y. and Oosawa, K. (1992). Stimulation of benzyladenine-induced *in vitro* shoot organogenesis in *Cucumis melo* L by proline, salicylic acid and aspirin. **Plant Science**, 84:193-199.
12. Shetty, K. and McKersie, B. D. (1993). Proline, thioproline and potassium mediated stimulation of somatic embryogenesis in alfalfa (*Medicago sativa* L). **Plant Science**, 88:185-193.

**--Since joining the University of Massachusetts, Amherst**

13. Shetty, K., Curtis, O.F., Levin, R.E., Witkowsky, R. and Ang, W. (1995). Prevention of vitrification associated with *in vitro* shoot culture of oregano (*Origanum vulgare*) by *Pseudomonas* spp. **J. Plant Physiol.**, 147:447-451.
14. Curtis, O.F., Shetty, K., Cassagnol, G. and Peleg, M. (1996). Comparison of the inhibitory and lethal effects of plant metabolites (anethole, carvacrol, eugenol and thymol) on food spoilage yeast (*Debaryomyces hansenii*). **Food Biotechnology**, 10: 55-73.
15. Shetty, K., Curtis, O.F. and Levin, R.E. (1996). Specific interaction of mucoid strains of *Pseudomonas* spp. with oregano (*Origanum vulgare*) clones and the relationship to prevention of hyperhydricity in tissue culture. **J. Plant Physiol.**, 149: 605-611.
16. Shetty, K., Carpenter, T.L., Kwok, D., Curtis, O.F. and Potter, T.L. (1996). Selection of high phenolics-containing clones of thyme (*Thymus vulgaris* L.) using *Pseudomonas* spp. **J. Agric. Food Chem.**, 44:3408-3411.
17. Shetty, K., Carpenter, T., Curtis, O.F. and Potter, T.L. (1996). Reduction of hyperhydricity in tissue cultures of oregano (*Origanum vulgare*) by extracellular polysaccharide isolated from *Pseudomonas* spp. **Plant Science**, 120:175-183.
18. Eguchi, Y., Curtis, O.F. and Shetty, K. (1996). Interaction of hyperhydricity-preventing *Pseudomonas* spp. with oregano (*Origanum vulgare*) and selection of high rosmarinic acid-producing clones. **Food Biotechnology**, 10:191-202.
19. Kwok, D. and Shetty, K. (1996). *Pseudomonas* spp-mediated regulation of total phenolics and rosmarinic acid in thyme (*Thymus vulgaris*) clonal lines. **J. Food Biochemistry**, 20:365-377.
20. Ueno, K. and Shetty, K. (1997). Effect of selected polysaccharide-producing soil bacteria on hyperhydricity control in oregano tissue cultures. **Applied Environmental Microbiol.**, 63:767-770.
21. Shetty, K., Ohshima, M., Murakami, T., Oosawa, K. and Ohashi, Y. (1997). Transgenic melon (*Cucumis melo* L.) and potential for expression of novel proteins important to food industry. **Food Biotechnology**, 11:111-128.
22. Yang, R., Potter, P.T., Curtis, O.F. and Shetty, K. (1997). Tissue culture-based Selection of high rosmarinic acid producing clones of Rosemary (*Rosmarinus officinalis* L.) Using *Pseudomonas* Strain . **Food Biotechnology**, 11:73-88.
23. Eguchi, Y., Bela, J.S. and Shetty, K. (1998). Stimulation of somatic embryogenesis in anise (*Pimpinella anisum*) by fish protein hydrolysates in combination with proline. **J. Herbs, Spices and Medicinal Plants**, 5:61-68.
24. Zheng, Z. and Shetty, K. (1998). Cranberry processing waste for solid-state fungal inoculant production. **Process Biochemistry**, 33:323-329.

25. Kwok, D. and Shetty, K. (1998). Effect of proline and proline analogs on total phenolic and rosmarinic acid levels in shoot clones of thyme (*Thymus vulgaris* L.). **J. Food Biochemistry**, 22:37-51.
26. Zheng, Z. and Shetty, K. (1998). Solid state production of beneficial fungi on apple processing waste using glucosamine as the indicator of growth. **J. Agric.Food Chem.**, 46:783-787.
27. Ueno,K., Cheplick,S. and Shetty, K. (1998). Reduced hyperhydricity and enhanced growth of tissue culture-generated raspberry (*Rubus* sp.) clonal lines by *Pseudomonas* sp. isolated from oregano. **Process Biochemistry**, 33:229-238.
28. Komali,A.S. and Shetty, K. (1998). Comparison of the growth pattern and rosmarinic acid production in rosemary (*Rosmarinus officinalis*) shoots and genetically transformed callus cultures. **Food Biotechnology**, 12:27-41.
29. Milazzo,M.C., Kellet,G., Haynesworth, K. and Shetty, K. (1998). Regulation of benzyladenine-induced *in vitro* shoot organogenesis and endogenous proline in melon (*Cucumis melo* L. ) by exogenous proline, ornithine and proline analogs. **J. Agric.Food Chem.**, 46:2402-2406.
30. Yang,R. and Shetty, K. (1998). Stimulation of rosmarinic acid in shoot cultures of oregano (*Origanum vulgare*) clonal line in response to proline, proline analog and proline precursors. **J. Agric.Food Chem.**, 46:2888-2893.
31. Ueno,K. and Shetty, K. (1998). Prevention of hyperhydricity in oregano shoot cultures is sustained through multiple subcultres by selected polysaccharide-producing soil bacteria without re-inoculation. **Appl. Microbiol. Biotechnology**, 50:119-124.
32. Komali,A.S., Peleg, M., Gerhards,C. and Shetty, K. (1998). A study of the cell wall mechanical properties in unhyperhydrated shoots of oregano (*Origanum vulgare*) inoculated with *Pseudomonas* sp. by load deformation analysis. **Food Biotechnology**, 12:209-220.
33. Zheng,Z., Pinkham, J.L. and Shetty, K. (1998). Identification of polymeric dye-tolerant oregano (*Origanum vulgare*) clonal lines by quantifying total phenolics and peroxidase activity. **J. Agric. Food Chem.**, 46:4441-4446.
34. Bela, J., Ueno, K. and Shetty, K. (1998). Control of hyperhydricity in anise (*Pimpinella anisum*) tissue cultures by *Pseudomonas* spp. **J. Herbs, Spices and Medicinal Plants**, 6:47-57.

**Post-Tenure Associate Professor (University of Massachusetts, Amherst)**

35. Bela,J. and Shetty, K. (1999). Somatic embryogenesis in anise (*Pimpinella anisum* L.) : The effect of proline on embryogenic callus formation and ABA on advanced embryo development. **J. Food Biochemistry**, 23:17-32.
36. Zheng,Z., Levin,R.E., Pinkham, J.L. and Shetty, K. (1999). Decolorization of polymeric dyes by a novel *Penicillium* isolate. **Process Biochemistry**, 34:31-37.
37. Milazzo, M.C., Zheng, Z., Kellet, G., Haynesworth, K., and Shetty, K., (1999). Stimulation of benzyladenine-induced *in vitro* shoot organogenesis and endogenous proline in melon (*Cucumis melo* L) by fish protein hydrolysates in combination with proline analogs. **J. Agric. Food Chem.**, 47:1771-1775.

38. Andarwulan,N., and Shetty,K. (1999). Phenolic content in differentiated tissue cultures of untransformed and *Agrobacterium*-transformed roots of anise (*Pimpinella anisum* L.). **J. Agric. Food Chem.**, 47:1776-1780.
39. Zheng, Z. and Shetty, K. (1999). Effect of apple pomace-based *Trichoderma* inoculants on seedling vigor in pea (*Pisum sativum*) germinated in potting soil. **Process Biochemistry**, 34:731-735.
40. Perry, P., Ueno, K. and Shetty, K. (1999). Reversion to hyperhydration by addition of antibiotics to remove *Pseudomonas* in unhyperhydrated oregano tissue cultures. **Process Biochemistry**, 34:717-723.
41. Perry,P.L. and Shetty, K. (1999). A model for involvement of proline during *Pseudomonas*-mediated stimulation of rosmarinic acid. **Food Biotechnology**, 13:137-154.
42. Komali, A.S., Zheng, Z. and Shetty, K. (1999). A mathematical model for the growth kinetics and total phenolics synthesis in *Pseudomonas* species inoculated shoot cultures of oregano (*Origanum vulgare*) **Process Biochemistry**, 35:227-235.
43. Al-Amier, H., Mansour, B.M.M., Toaima. N., Korus, R.A. and Shetty, K. (1999). Tissue culture-based screening for selection of high biomass and phenolic-producing clonal lines of Lavender using *Pseudomonas* and azetidine-2--carboxylate. **J. Agric. Food Chem.**, 47:2937-2943.
44. Andarwulan,N. and Shetty,K. (1999). Antioxidant activity associated with lipid and total phenolic mobilization during seed germination of *Pangium edule* Reinw. **J. Agric. Food.Chem.**, 47:3158-3163.
45. Andarwulan, N., Fardiaz, S., Apriyantono, A., Hariyadi, P. and Shetty, K. (1999). Mobilization of primary metabolites and phenolics during natural fermentation in seeds of *Pangium edule* Reinw. **Process Biochemistry**, 35:197-204.
46. Andarwulan, N. and Shetty, K. (1999).Improvement of pea (*Pisum sativum*) seed vigor by fish protein hydrolysates in combination with acetyl salicylic acid. **Process Biochemistry**, 35:159-165.
47. Andarwulan, N. and Shetty, K. (1999).Influence of fish protein hydrolysates in combination with acetyl salicylic acid on hyperhydricity reduction and phenolic synthesis in oregano (*Origanum vulgare*) tissue cultures. **J. Food Biochemistry**, 23:619-635.
48. Al-Amier, H., Mansour, B.M.M., Toaima, N. Korus, R.A and Shetty, K. (1999). Screening of high biomass and phenolic-producing clonal lines of Spearmint in tissue culture using *Pseudomonas* and azetidine-2-carboxylate. **Food Biotechnology**, 13:227-253.
49. Duval, B., Shetty, K. and Thomas, W.H. (1999). Phenolic compounds and antioxidant properties in the snow alga *Chlamydomonas nivalis* after exposure to UV light. **J. Applied Phycology**, 11:559-566.
50. Eguchi,Y., Milazzo,M.C.,Ueno,K. and Shetty,K. (2000). Partial improvement of vitrification and acclimation of oregano (*Origanum vulgare*) tissue cultures by fish protein hydrolysates. **J. Herbs, Spices and Medicinal Plants**, 6:29-38.
51. McCue,P., Zheng,Z., Pinkham.J.L. and Shetty,K. (2000). A model for enhanced pea seedling vigor following low pH and salicylic acid treatments. **Process Biochemistry**, 35:603-613.
52. Zheng, Z. and Shetty,K. (2000). Azo dye-mediated regulation of total phenolics and peroxidase activity in thyme (*Thymus vulgaris* L.) and rosemary (*Rosmarinus officinalis* L.) clonal lines. **J. Agric. Food Chem.**, 48:932-937.

53. Zheng, Z. and Shetty, K. (2000). Solid-state bioconversion of phenolics from cranberry pomace and role of *Lentinus edodes* beta-glucosidase. **J. Agric. Food Chem.**, 48:895-900.
54. Zheng, Z. and Shetty, K. (2000). Solid-state production of polygalacturonase by *Lentinus edodes* using fruit processing wastes. **Process Biochemistry**, 35:825-830.
55. Andarwulan, N. and Shetty, K. (2000). Stimulation of novel phenolic metabolite, epoxy-Pseudoisoeugenol-(2-Methylbutyrate)[EPB], in transformed anise (*Pimpinella anisum* L.) root cultures by fish protein hydrolysates. **Food Biotechnology**, 14:1-20.
56. Zheng, Z. and Shetty, K. (2000). Enhancement of pea (*Pisum sativum*) seedling vigor and associated phenolic content by extracts of apple pomace fermented with *Trichoderma* spp. **Process Biochemistry**, 36:79-84.
57. Zheng, Z., Sheth, U., Nadiga, M., Pinkham, J.L. and Shetty, K. (2001). A model for the role of proline-linked phenolic synthesis and peroxidase activity associated with polymeric dye tolerance in oregano. **Process Biochemistry**, 36:941-946.
58. Al Ameir, H.A., Mansour, B.M.M., Toaima, N., Craker, L. and Shetty, K. (2001). Tissue culture for phenolics and rosmarinic acid in thyme. **J. Herbs, Spices and Medicinal Plants**, 8:31-42.
59. Shetty, P., Atallah, M.T. and Shetty, K. (2001). Enhancement of total phenolic, L-DOPA and proline contents in germinating fava bean (*Vicia faba*) in response to bacterial elicitors. **Food Biotechnology**, 15:47-67.
60. Duval, B. and Shetty, K. (2001). The stimulation of phenolics and antioxidant activity in pea (*Pisum sativum*) elicited by genetically transformed anise root extract. **J. Food Biochemistry**, 25:361-377.
61. Kaspera, R., McCue, P. and Shetty, K. (2001). Partial purification of a basic guaiacol peroxidase from fava bean (*Vicia faba* L.): Characterization of enzyme stability following elicitor treatment. **Food Biotechnology**, 15: 99-111.
62. McCue, P. and Shetty, K. (2002). Clonal herbal extracts as elicitors of phenolic synthesis in dark-germinated mungbeans for improving nutritional value with implications for food safety. **J. Food Biochemistry**, 26: 209-232.
63. Strycharz, S. and Shetty, K. (2002). Peroxidase activity and phenolic content in elite clonal lines of *Mentha pulegium* in response to polymeric dye R-478 and *Agrobacterium rhizogenes*. **Process Biochemistry**, 37: 805-812.
64. Shetty, P., Atallah, M.T. and Shetty, K. (2002). Effects of UV treatment on the proline-linked pentose phosphate pathway for phenolics and L-DOPA synthesis in dark germinated *Vicia faba*. **Process Biochemistry**, 37: 1285-1295.
65. Randhir, R., Shetty, P. and Shetty, K. (2002). L-DOPA and total phenolic stimulation in dark germinated fava bean in response to peptide and phytochemical elicitors. **Process Biochemistry**, 37:1247-1256.
66. McCue, P. and Shetty, K. (2002). A biochemical analysis of mungbean (*Vigna radiata*) response to microbial polysaccharides and potential phenolic-enhancing effects for nutraceutical applications. **Food Biotechnology**, 16:57-79.
67. Strycharz, S. and Shetty, K. (2002). Response of oregano (*Origanum vulgare*) clonal lines to *Pseudomonas* sp. Z strain and polydye R-478 and implications for hyperhydricity prevention in tissue culture. **Process Biochemistry**, 38:343-350.

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69. Vatter, D.A. and Shetty, K. (2002). Solid-state production of phenolic antioxidants from cranberry pomace by *Rhizopus oligosporus*. **Food Biotechnology**, 16:189-210.
70. Randhir, R. and Shetty, K. (2003). Light-mediated fava bean (*Vicia faba*) response to phytochemical and protein elicitors and consequences on nutraceutical enhancement and seed vigor. **Process Biochemistry**, 38: 945-952.
71. Shetty, P., Atallah, M.T. and Shetty, K. (2003). Stimulation of total phenolics, L-DOPA and antioxidant activity through proline-linked pentose phosphate pathway in response to proline and its analog in germinating fava beans (*Vicia faba*) **Process Biochemistry**, 38: 1707-1717.
72. McCue, P. and Shetty, K. (2003). Role of carbohydrate-cleaving enzymes in phenolic antioxidant mobilization from whole soybean fermented with *Rhizopus oligosporus*. **Food Biotechnology**, 17:27-37.
73. Seaberg, A., Labbe, R.L. and Shetty, K. (2003). Inhibition of *Listeria monocytogenes* by elite clonal extracts of oregano (*Origanum vulgare*). **Food Biotechnology**, 17: 129-149.
74. Vatter, D.A. and Shetty, K. (2003). Acrylamide in food: Probable mechanisms of formation and its reduction. **Innovative Food Science and Emerging Technologies**, 4: 331-338.
75. McCue, D.A., Horii, A and Shetty, K. (2003). Solid-state bioconversion of phenolic antioxidants from defatted powdered soybean by *Rhizopus oligosporus*: Role of carbohydrate cleaving enzymes. **J. Food Biochemistry**, 27: 501-514.
76. Vatter, D.A. and Shetty, K. (2003). Ellagic acid production and phenolic antioxidant activity in cranberry pomace mediated by *Lentinus edodes* using solid-state system. **Process Biochemistry**, 39: 367-379.
77. Randhir, R., Lin, Y-T. and Shetty, K. (2004). Stimulation of phenolics, Antioxidant and antimicrobial activities in dark germinated mung bean (*Vigna radiata*) sprouts in response to peptide and phytochemical elicitors. **Process Biochemistry**, 39: 637-646.
78. Vatter, D.A., Lin, Y.T., Labbe, R.G. and Shetty, K. (2004). Phenolic antioxidant mobilization in cranberry pomace by solid-state bioprocessing using food grade fungus *Lentinus edodes* and effect on antimicrobial activity against select food-borne pathogens. **Innovative Food Science and Emerging Technologies**, 5: 81-91.
79. McCue, P., and Shetty, K. (2004). Inhibitory effects of rosmarinic acid extracts on porcine pancreatic amylase and implications for health. **Asia Pacific Journal of Clinical Nutrition**, 13: 101-106.
80. Randhir, R., Vatter, D. and Shetty, K. (2004). Solid-state bioconversion of fava bean by *Rhizopus oligosporus* for enrichment of phenolic antioxidants and L-DOPA. **Innovative Food Science and Emerging Technologies**, 5: 235-244.
81. Randhir, R. and Shetty, K. (2004). Microwave-induced stimulation of L-DOPA, phenolics and antioxidant activity in fava bean (*Vicia faba*) for Parkinson's diet. **Process Biochemistry**, 39: 1775-1784.

82. McCue, P. and Shetty, K. (2004). A role for amylase and peroxidase-linked polymerization in phenolic antioxidant mobilization in dark-germinated soybean and implications for health. **Process Biochemistry**, 39: 1785-1791.

#### **Since Promotion to Professor at University of Massachusetts, Amherst**

83. McCue P., Lin Y-T., Labbe, R.G. and Shetty, K. (2004). Sprouting and solid-state bioprocessing by *Rhizopus oligosporus* increase the *in vitro* antibacterial activity of aqueous soybean extracts against *Helicobacter pylori*. **Food Biotechnology**, 18: 229-249.
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85. Correia, R.T.P., McCue, P., Margarida, M.A.M., Macedo, G.R. and Shetty, K (2004). Production of phenolic antioxidants by solid-state bioconversion of pineapple waste mixed with soy flour using *Rhizopus oligosporus*. **Process Biochemistry**, 39: 2167-2172.
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87. McCue, P., Horii, A. and Shetty, K. (2004). Mobilization of phenolic antioxidants from defatted soybean powders by *Lentinus edodes* during solid-state fermentation is associated with enhanced production of laccase. **Innovative Food Science and Emerging Technologies**, 5: 385-392.
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89. Correia, R.T.P., McCue, P., Margarida, M.A.M., Macedo, G.R. and Shetty, K (2004). Phenolic antioxidant enrichment of soy flour-supplemented guava waste by *Rhizopus oligosporus*- mediated solid-state bioprocessing. **J. Food Biochemistry**, 28: 404-418.
90. Correia, R.T.P., McCue, P., Vatter, D.A., Margarida, M.A.M., Macedo, G.R. and Shetty, K (2004). Amylase and *Helicobacter pylori* inhibition by phenolic extracts of pineapple wastes bioprocessed by *Rhizopus oligosporus*. **J. Food Biochemistry**, 28: 419-434.
91. McCue, P., Vatter, D.A. and Shetty, K. (2004). Inhibitory effect of clonal oregano extracts against porcine pancreatic amylase *in vitro*. **Asia Pacific Journal of Clinical Nutrition**, 13: 401-408.
92. Lee, E-J., Kwon, Y-I., Shetty, K. and Jang, H-D. (2004). Antioxidant activity of *Rhodiola rosea* extract on human low-density lipoprotein oxidation and DNA strand scission. **Food Science and Biotechnology**, 13: 814-820.
93. Chun, S-S., Vatter, D.A., Lin, Y-T. and Shetty, K. (2005). Phenolic antioxidants from clonal oregano (*Origanum vulgare*) with antimicrobial activity against *Helicobacter pylori*. **Process Biochemistry**, 40: 809-816.
94. McCue, P. and Shetty, K. (2005). A model for the involvement of lignin degradation enzymes in phenolic antioxidant mobilization from whole soybean during solid-state bioprocessing by *Lentinus edodes*. **Process Biochemistry**, 40: 1143-1150.

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### **Concept, Hypothesis and Review Papers**

1. Shetty, K. (1997). Biotechnology to harness the benefits of dietary phenolics; Focus on Lamiaceae. **Asia Pacific J. Clinical Nutrition**, 6:162-171.
2. Vatter, D. and Shetty, K. (2003). Enrichment of phenolic antioxidants by solid-state bioprocessing. **AGROFood Industry Hi-Tech.**, 14:54-57. (Invited Review)
3. Shetty, K and McCue, P. (2003). Phenolic antioxidant biosynthesis in plants for functional food application: Integration of Systems Biology and Biotechnological Approaches. **Food Biotechnology**, 17:67-97.

4. Shetty, K. (2004). Role of proline-linked pentose phosphate pathway in biosynthesis of plant phenolics for functional food and environmental applications; A review. **Process Biochemistry**, 39:789-804.
5. Shetty, K and Wahlqvist, M.L. (2004). A model for the role of proline-linked pentose phosphate pathway in phenolic phytochemical biosynthesis and mechanism of action for human health and environmental applications; A Review. **Asia Pacific J. Clinical Nutrition**, 13: 1-24.
6. McCue, P. and Shetty, K. (2004). A hypothetical model for the action of soybean isoflavonoids against cancer involving a shift to proline-linked energy metabolism through activation of the pentose phosphate pathway. **Food Biotechnology**, 18: 19-37.
7. McCue, P. and Shetty, K. (2004). Health benefits of Soy Isoflavonoids and Strategies for Enhancement: A Review. **Critical Reviews in Food Science and Nutrition**, 44: 1-7.
8. Vatter, D.A., Ghaedian, R. and Shetty, K. (2005). Enhancing health benefits of cranberry through phenolic antioxidant enrichment. **Asia Pacific J. Clinical Nutrition**, 14: 120-130.
9. Vatter, D.A. and Shetty, K (2005). Biological functionality of ellagic acid; A Review. **J. Food Biochemistry**, 29: 234-266.
10. Sarkar, D. and Shetty, K. (2014). Metabolic stimulation of plant phenolics for food preservation and health. **Annual Review of Food Science and Technology**, 5: 395-413.
11. Shouk, R.; Abdou, A.; Shetty, K.; Sarkar, D. and Eid, A.H. (2014). Mechanisms underlying the antihypertensive effects of garlic bioactives. **Nutrition Research**, 34: 106-115.

### **Book Chapters**

1. Shetty, K. (1999) Phytochemicals: Biotechnology of phenolic phytochemicals for food preservatives and functional food applications. In: **Wiley Encyclopedia of Food Science and Technology**, 2nd Edition, Edited by F.J.Francis, Wiley Publishers, NY. pgs.1901-1909.
2. Zheng, Z. and Shetty, K. (1999) Solid-state fermentation and value-added utilization of fruit and vegetable processing by-products. In: **Wiley Encyclopedia of Food Science and Technology**, 2nd Edition, Edited by F.J.Francis, Wiley Publishers, NY. pgs.2165-2174.
3. Shetty, K. (2001) Biosynthesis of rosmarinic acid and applications in medicine. In: **The Use and Validation of Natural Products and Medicinal Plants in Medicine** [L. Nolan and L.C. Craker (Eds)]. Published by Food Products Press (Haworth Press, Inc.) In: **J. Herbs Spices and Medicinal Plants**, Vol. 8: 161-181.
4. McCue, P. and Shetty, K. (2005) Principles of Biochemistry and Molecular Biology. In: **Food Biotechnology, 2<sup>nd</sup> Edition** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 19-32.
5. McCue, P. and Shetty, K. (2005) Potential Health Benefits of Soybean Isoflavonoids and Related Phenolic Antioxidants. In: **Food Biotechnology, 2<sup>nd</sup> Edition** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 771-787 & **In: Functional Foods & Biotechnology (2006)** (Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 133-149.

6. Vatter, D.A. and Shetty, K. (2005) Biochemical Markers for Antioxidant Functionality. **In: Food Biotechnology, 2<sup>nd</sup> Edition** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. Marcel Dekker and CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 1205-1227 & In: **Functional Foods & Biotechnology (2006)** (Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 229-251.
7. Vatter, D.A. and Shetty, K. (2005) Functional phytochemicals from cranberries: their mechanism of action and strategies to improve functionality. **In: Food Biotechnology, 2<sup>nd</sup> Edition** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. Marcel Dekker and CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 789-823 & In: **Functional Foods & Biotechnology (2006)** (Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 151-185.
8. Randhir, R. and Shetty, K. (2005) Biotechnology of Non-nutritive sweeteners. **In: Food Biotechnology, 2<sup>nd</sup> Edition** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. Marcel Dekker and CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 915-932 & In: **Functional Foods & Biotechnology (2006)** (Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 327-344.
9. Smith-Schneider, S. Roberts, L.A. and Shetty, K. (2005) Phytochemicals and Breast Cancer Chemoprevention. **In: Food Biotechnology, 2<sup>nd</sup> Edition** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. Marcel Dekker and CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 867-897 & In: **Functional Foods & Biotechnology (2006)** (Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 253-283.
10. Shetty, K., Vatter, D.A. and Clydesdale, F. M. (2005) Clonal screening and sprout-based bioprocessing for phenolic phytochemicals for functional foods. **In: Food Biotechnology, 2<sup>nd</sup> Edition** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. Marcel Dekker and CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 603-625 & In: **Functional Foods & Biotechnology (2006)** (Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 1-23.
11. Shetty, K. (2005) Rosmarinic acid biosynthesis and mechanism of action. **In: Food Biotechnology, 2<sup>nd</sup> Edition** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. Marcel Dekker and CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 825-845 & In: **Functional Foods & Biotechnology (2006)** (Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 187-207.
12. Shetty, K., Randhir, R. and Shetty, P. (2005) Bioprocessing strategies to enhance L-DOPA and phenolic antioxidants in fava bean (*Vicia faba*). **In: Food Biotechnology, 2<sup>nd</sup> Edition** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. Marcel Dekker and CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 847-865 & In: **Functional Foods & Biotechnology (2006)** (Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 209-227.
13. Shetty, K. and Lin, Y-T. (2005) Phenolic antimicrobials from plants for control of bacterial pathogens. **In: Food Biotechnology, 2<sup>nd</sup> Edition** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. Marcel Dekker and CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 1479-1503 & In: **Functional Foods & Biotechnology (2006)** (Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 285-309.

14. Shetty, K. (2005) Solid-state bioprocessing for functional food ingredients and food waste remediation. In: **Food Biotechnology, 2<sup>nd</sup> Edition** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. Marcel Dekker and CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 1691-1704 & In: **Functional Foods & Biotechnology (2006)** (Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL. Pages 611-624.
15. Bhowmick, P.C., Shetty, K. and Sarkar, D. (2007) Cold Stress Response of Cool Season Turf Grass: Antioxidant Mechanisms. In: **Turf Grass Management and Physiology**, (Pessarakli, M. (ed). CRC Press, Boca Raton, FL. Pages 507-530.
16. Ray, R.C., Shetty, K. and Ward, O.P. (2008), Solid State Fermentation and Value-Added Utilization of Horticultural Processing Wastes. In: **Microbial Biotechnology in Horticulture, Volume 3**, Eds. R.C. Ray and O.P. Ward, Science Publishers, Inc, NH, USA, pp.231-272.
17. Shetty, K., Adyanthaya, I., Kwon, Y-I., Apostolidis, E., Min, B-J., Dawson, P (2008). Postharvest enhancement of phenolic phytochemicals in apples for preservation and health benefits. In: **Postharvest Biology and Technology of Fruits, Vegetables and Flowers** (Paliyath G, Murr D, Handa AK, Lurie S {eds}) 2008, Chapter 16, Pages 341-371. Wiley-Blackwell Publishing, Ames, Iowa, USA.
18. Pinto, M.D.S. and Shetty, K. (2010) Health Benefits of Berries for Potential Management of Hyperglycemia and Hypertension. In: **Flavor and Health Benefits of Small Fruits (Qian, M.C. and Rimando, A.M. (Eds))** ACS Publications, Washington, DC, USA. Chapter 8, pp 121- 137.
19. Paliyath, G. and Shetty, K. (2011) Functional Foods, Nutraceuticals, and Disease Prevention: A Window to the Future of Health Promotion. In: **Functional Foods, Nutraceuticals and Degenerative Disease Prevention** (Paliyath, G., Bakovic, M. and Shetty, K. (Eds)).ISBN-13: 978-0-8138-2453-6 - John Wiley & Sons, NY. Pages 3-10.
20. Saleem, F., Eid, A.H. and Shetty, K. (2011) Potato-Herb Synergies as Food Designs for Hyperglycemia and Hypertension Management. In: **Functional Foods, Nutraceuticals and Degenerative Disease Prevention** (Paliyath, G., Bakovic, M. and Shetty, K. (Eds)).ISBN-13: 978-0-8138-2453-6 - John Wiley & Sons, NY. Pages 325-340.
21. Ankolekar, C. and Shetty, K. (2011) Fermentation-Based Processing of Food Botanicals for Mobilization of Phenolic Phytochemicals for Type 2 Diabetes Management. In: **Functional Foods, Nutraceuticals and Degenerative Disease Prevention** (Paliyath, G., Bakovic, M. and Shetty, K. (Eds)).ISBN-13: 978-0-8138-2453-6 - John Wiley & Sons, NY. Pages 341-356.
22. Sarkar, D. and Shetty, K. (2011) Postharvest Strategies to Enhance Bioactive Ingredients for Type 2 Diabetes Management and Heart Health. In: **Functional Foods, Nutraceuticals and Degenerative Disease Prevention** (Paliyath, G., Bakovic, M. and Shetty, K. (Eds)).ISBN-13: 978-0-8138-2453-6 - John Wiley & Sons, NY. Pages 357-394.
23. Sarkar, D., Ankolekar, C. and Shetty, K. (2012) Functional Food Components for Preventing and Combating Type 2 Diabetes. In: **Emerging Trends in Dietary Components for Preventing and Combating Disease**. Edited by Patil, B. et al., ACS Symposium Series. Volume 1093. **Publication Date (Web): March 6, 2012**. Chapter 20, pp 345-374.
24. Sarkar, D. and Shetty, K. (2014). Diabetes as a Disease of Aging, and the Role of Oxidative Stress. In V. Preedy (Ed.), **Aging: Oxidative Stress and Dietary Antioxidants**. Elsevier, Oxford, UK. Chapter 6, pp 61-69.

25. Sarkar, D. and Shetty, K. (2014). Metabolic Mobilization Strategies to Enhance the Use of Plant-Based Dietary Antioxidants for the Management of Type 2 Diabetes. In V. Preedy (Ed.), **Aging: Oxidative Stress and Dietary Antioxidants**. Elsevier, Oxford, UK, Chapter 27, pp 289-296.

### **Manuscripts in Conference Proceedings**

1. Shetty, K. and Curtis, O.F. (1995). The biotechnology of plant secondary metabolites and their applications in food. In: Proceedings of Indonesian Workshop on "Benefits of Traditional Food", Jakarta, June 9-11, 1995. Indonesia.
2. Bela, J. S. and Shetty, K. (1996). *In vitro* developmental response of anise to growth regulators and establishment of a clonal propagation system. **Acta Horticulturae**, 426:483-488..
3. Curtis, O. F. and Shetty, K. (1996). Growth medium effects on vitrification, total phenolics, chlorophyll and water content of *in vitro* propagated oregano clones. **Acta Horticulturae**, 426:489-504.
4. Kellet, G., Reid, J. and Shetty, K. (1996). Bacterial-mediated stimulation of phenolics and control of vitrification in clonal line of oregano. **Acta Horticulturae**, 426:505-510..
5. Shetty, K., Nadiga, M., Zheng, Z. and Lanza, G. (1997). Phytoremediation of aromatic pollutants and selection of elite clones. Proceedings of Tsukuba Advanced Research Alliance Symposium; Feb. 21, 1997, Tsukuba University, Japan.
6. Shetty, K., Nadiga, M., Zheng, Z. and Lanza, G. (1997). Phytoremediation of aromatic pollutants and selection of elite clones. Proceedings of Microbial-Based Technologies for Pollution Abatement of Laguna DeBay, Manila. Sponsored by University of the Philippines and Japanese Society for Promotion of Science; Feb. 25-27, 1997, Makato City, Philippines.
7. Shetty, K., Kwok, D. and Labbe, R.G. (1997). Antioxidants and antimicrobials from elite thyme clones. In: Proceedings of Herb '97 - International Herb Conference, Danvers, July 10-14, 1997, MA. .
8. Shetty, K. and Labbe, R.G. (1998). Food borne pathogens, health and role of dietary phytochemicals. In: Proceedings of 2nd Asia-Pacific Clinical Nutrition Society Conference, Mar, 1998, Kuching, Malaysia. In: **Asia Pacific J.Clinical Nutrition**, Vol: 7: 270-276.
9. Shetty, K. (2000). A rationale integrated approach to scientific and commercial development of botanical nutraceuticals. In: Proceeding of the Vitafoods International Conference, May, 2000, Geneva, Switzerland.
10. Shetty, K. (2002). "Botanical Ingredients as Nutraceuticals". In Proceedings of Vitafoods International Conference, Geneva, Switzerland, May, 2002.
11. Shetty, K., Lin, Y-T., McCue, P., Labbe, R.G., Randhir, R. and Ho, C-H. (2003) Low microbial load sprouts with enhanced antioxidants for Astronaut diet. In Proceeding of International Conference on Environmental Systems, Vancouver, BC; Canada, July, 2003.
12. Shetty, K. (2007) Estrategias de Comercializacion en Biotecnologia y Ciencias de la vida: Desafios. In Proceedings (Textos) Gestion-Innovacion y Comercializacion en Biotecnologia (Gil, L and Adonis, M. (eds)). Editorial Universitaria (University of Chile, Santiago).
13. Lin, D-R., Hu, L-J., You, H., Sarkar, D., Xing, B-S. and Shetty, K. (2010) Initial Screening Studies on Potential of High Phenolic-Linked Plant Clonal Systems for Nitrate Removal in Cold Latitudes. **J Soils & Sediments**, 10:923-932.

## **Patents**

1. Shetty, K. (1999) Plant Clones Containing Elevated Secondary Metabolite Levels "U.S. Patent" # 5,869,340.
2. Shetty, K., Zheng, Z. and Levin, R. (1999) *Penicillium* strain for Bioremediation "U.S. Patent" # 5,877,014.
3. Shetty, K. (1999) Fruit Pomace Compositions and Uses Thereof "U.S. Patent" # 5,882,641.
4. Shetty, K. (1999) Plant Propagation Compositions and Methods "U.S. Patent" # 5, 906,941.
5. Shetty, K. (2007) Organic Compositions and Methods of Use for Promoting Plant Growth "U.S Patent" # 7,271,128 B2.
6. Ghaedian, R. Shinde, R.M..and Shetty, K. (2013) Compositions and Methods for controlling metabolic syndrome using whole fruit-derived cranberry ingredient profile enriched in stress adapted bioactives (SABs). "U.S. Patent" # 8,557,305 B2.

## **Invited Lectures and Seminars**

1. Givaudan Roure, Clifton, NJ, USA; June 1994. Biotechnological applications for flavor production in plants.
2. Mannheimer, Inc., NY, USA; Oct. 1994. Development of natural flavors from plants and microbes using biotechnology.
3. Ocean Spray, Middleboro, Massachusetts, USA Oct, 1994; Solid-state fermentation of cranberry wastes to produce value-added metabolites.
4. Bogor Agricultural University, Bogor, Indonesia, June 1995. Biotechnological approaches to harness the potential of secondary metabolite-producing plants.
5. Indonesian National Workshop on Benefits of Traditional Food, June, 1995, Jakarta, Indonesia. "Biotechnology of Plant Secondary Metabolites for Food Applications".
6. National Institute of Agrobiological Resources, Tsukuba, Japan, June 1995. Biotechnology of plant secondary metabolites for food and pharmaceutical applications.
7. Chiba University, Matsudo, Japan, Apr, 1996. Biotechnology of Plant Phenolics; Role in food applications and plant development.
8. National Institute of Agrobiological Resources, Tsukuba, Japan, April 1996. Use of PR-GUS Fusions in transgenic tobacco to select antiinflammatory metabolites in elite clones of oregano and thyme.
9. Goodman-Fielder Medical Oration, Dec, 1996, Monash University, Melbourne, Australia. "Biotechnology to Harness the Benefits of Dietary Phenolics: Focus on Lamiaceae".
10. Department of Medicine, Monash Medical Center; Monash University, Melbourne, Australia, Dec, 1996. Health benefits of phenolics from fermented legumes.

11. Department of Nutrition, University of Agricultural Sciences, Bangalore, India, Jan, 1997. Health benefits of dietary phytochemicals.
12. Tsukuba Advanced Research Alliance, University of Tsukuba, Japan, Feb, 1997. Phytoremediation of aromatic pollutants and selection of elite clones.
13. University of the Philippines and Japanese Society for Promotion of Science, Makato City, Philippines, Feb. 1997. Phytoremediation of aromatic pollutants and pollution abatement in Laguna DeBay using plants.
14. Inter-Mountain Institute of Food Technology Meeting, Mar, 1997, Sun Valley, Idaho, USA. "Trends in Food Biotechnology: Market Opportunities for Idaho and Western States in the Asia-Pacific Region".
15. Department of Microbiology and Biochemistry, University of Idaho, USA April 1997. Regulation of phenolic synthesis in plants by microorganisms for food, pharmaceutical and environmental applications.
16. International Herb Conference, Herb '97, July, 1997, Danvers, MA, USA. "Antioxidants and antimicrobials from elite thyme clones".
17. Faculty of Biological Sciences, University of de Nuevo Leon, San Nicolas, Mexico, Sept, 1997. Plant biotechnology and phytoremediation of aromatic pollutants.
18. Department of Biology and Biotechnology, Worcester Polytechnique Institute, Worcester, MA, USA Nov 1997. Regulation of phenylpropanoid pathway metabolites by proline-linked pentose phosphate pathway.
19. Asia-Pacific Clinical Nutrition Society, Kuching, Malaysia, Mar, 1998. "Food borne pathogens, health and role of dietary phytochemicals".
20. Ist Latin American Conference on Soil and Water Contamination, Organized by International School for Environmental Technology, USAID and World Bank, in Quito, Ecuador, May, 1998. "Strategies for phytoremediation of aromatic pollutants".
21. Seminar on 'Microbial Interaction Strategies for Phytochemicals and Functional Foods' to New England Society of Industrial Microbiology, Oct, 1998. Groton, CT, USA.
22. Symposium on "Antioxidants and Oxidative Process in Health and Foods." Sponsored by the UMASS, Department of Food Science, Nov, 1998, Amherst, MA, USA.
23. Danish Agricultural Research Institute, Arsløv., Denmark, Apr, 1999. "Phytochemicals and Functional Foods: Non-transgenic Biotechnology Strategies".
24. Norris Ltd., at Icelandic Fisheries Institute, Reykjavik, Iceland, July, 1999. Value-added products from fishery byproducts for food, nutraceutical and agricultural applications.
25. Hershey Foods, PA, USA. July, 1999. Non-transgenic biotechnology for production of plant-based functional food ingredients for health and food preservation.
26. Decas Cranberry, MA, USA Aug, 1999. Nutraceutical value added products from processed cranberry.
27. Novartis Nutrition, MN, USA. Sept, 1999. Integrated approach to the development of Nutraceuticals and Functional Foods.

28. Eastern Institute of Food Technology Conference, Hershey, PA, USA October 1999. Emerging perspectives in Food Biotechnology: Non-transgenic approaches for plant-based functional ingredients for nutraceuticals and functional foods.
29. National University of Singapore, Department of Biological Sciences, Jan, 2000. "Emerging perspectives for the scientific development of nutraceuticals".
30. Bristol Myers Squibb, Wallingford, CT, USA Natural Products Group, Mar, 2000. "Technological innovations for consistency of botanical profiles for pharma applications".
31. Vitafoods International Conference, 2000, Geneva, Switzerland, May, 2000. Session on Natural and Herbal Products and Medicine: "A rationale integrated approach to scientific and commercial development of botanical nutraceuticals".
32. Ceres Listeria Round Table, Nov 2000, Georgetown University, Washington, DC, USA. "Elite herb extracts to control *Listeria*".
33. ETH-Zurich, Switzerland, Institute of Food Science, Dec 2000, "Biotechnology Strategies for development of Functional Foods".
34. Food Safety symposium, Clemson University, Clemson, USA, April, 2001. "Phytochemical extracts for control of food-borne pathogens".
35. Listeria Symposium, American Meat Institute Foundation, Dallas, TX, USA Dec, 2001. "Elite clonal herb extracts and pH interaction on Listeria control in meats".
36. Vitafoods International Conference, 2002, Geneva, Switzerland, May, 2002. "Botanical Ingredients as Nutraceuticals".
37. Strategic Research Alliance, Department of Food Science, UMASS, Amherst, MA, USA May 2003. "Phytochemicals and Health a Systems Biology Approach".
38. International Conference on Environmental Systems, Vancouver, BC; Canada, July 2003 " Low microbial load sprouts with enhanced antioxidants for Astronaut diet".
39. Iowa State University and NASA Food Technology Commercial Space Center, Ames IA, USA October, 2003 "Metabolic Biology of Phytochemicals for Functional Food".
40. NE Society of Industrial Microbiology, Boston, MA, USA October, 2003", Plant-Microbe Interaction for functional food developments"
41. Central Food Technological Research Institute, Mysore, India, Jan 2004, "Systems and Metabolic Biology of Phytochemicals for Chemoprevention".
42. International Union of Biological Sciences, General Assembly, Cairo, Egypt, Jan 2004, Workshop Presentation " Systems Biology of Plants for Environmental Health.
43. Faculty of Biological Sciences, University of de Nuevo Leon, San Nicolas, Mexico, September, 2004. "Systems Biology and Biotechnology for Development of Functional Foods and Food Safety".
44. International Agri-Biotechnology Conference, University of Agricultural Sciences, Bangalore, India, December, 2004. "Integration of Systems Biology and Biotechnology for Improvement of Horticultural Crops".

45. Faculty of Sciences, St. Aloysius College, Mangalore, India, December, 2004. "Biotechnology strategies for improvement of functional foods and food safety".
46. Department of Food Science and Nutrition, Hannam University, Deajeon, South Korea, January, 2005. "Biotechnology Strategies for Design of Functional Foods".
47. Faculty of Life Sciences, Jeju National University, Cheju, South Korea, January, 2005 " Next Generation Food Biotechnology for Management of Human Health".
48. Department of Food Science, Seoul National University, Seoul, South Korea, January, 2005 " Next Generation Food Biotechnology for Design of Functional Foods".
49. Asia Biotech Forum, Kuala Lumpur, Malaysia, February, 2005 "Next Generation Food Biotechnology and University-led IP Development".
50. Biotechnology and Food Science Program, University Putra Malaysia, Selangor, Malaysia, February, 2005 "Next Generation Food Biotechnology for Management of Human Health".
51. Faculty of Horticulture, Chiba University, Matsudo, Japan, February, 2005 "Next Generation Food Biotechnology for Management of Human Health".
52. Universidad Autonoma Coahuila, Saltilo, Mexico; Biotechnology Program, February, 2005 "Next Generation Food Biotechnology for the Management of Human Health".
53. Purdue University, West Lafayette, IN, USA Department of Horticulture, March, 2005 "Strategies for Design of Horticultural Crops for Functional Food Applications".
54. National Institute of Health-NCI, Bethesda, USA March, 2005 "Role of proline-linked pentose phosphate pathway for phenolic synthesis in plants and relevance to human health".
55. Bose Institute and Kolkatta University, Kolkatta, India, April, 2005 "Next Generation Food Biotechnology to Manage Human Health".
56. University of Burdwan, Burdwan, West Bengal, India, April, 2005 "Next Generation Food Biotechnology to Manage Human Health".
57. Bangalore Bio, 2005; Bangalore, India; April 2005 "Biotechnology Strategies to Develop Functional Foods and Nutraceuticals".
58. Bangalore Bio, 2005; Bangalore, India; April 2005 " India and the Knowledge Economy: Biotechnology Potential of India". Address to Indo-German Business Group.
59. MARDI-Malaysian Agricultural Research and Development Institute, Kuala Lumpur, Malaysia; April 2005 "Next Generation Food Biotechnology to Manage Human Health".
60. BioMalaysia, 2005; Putra Jaya, Malaysia; April 2005 "Next Generation Food Biotechnology and Global Challenges".
61. American Center Library & University National Autonomous of Mexico, Mexico City; May, 2005 "Next Generation Food Biotechnology to Manage Human Health".
62. University Autonomous at Chappingo; Chappingo, Mexico; May 2005 "Next Generation Food Biotechnology to Manage Human Health".

63. CIATEJ-Center for Research and Assistance in Technology and Design (Food Technology) and Rural Development Secretariat; Guadalajara, Mexico; May 2005 "Biotechnology Strategies for Functional Foods and Food Safety".
64. Weizmann Institute of Science, Rehovot; Israel; May 2005 "Design of Functional Foods to Manage Human Health".
65. Volcani Research Institute, Bet Dagan; Israel; May 2005 "Biotechnology Strategies to Design Functional Foods".
66. Bio-Tech Israel; 2005, Tel Aviv; Israel; May 2005 "Biosynthesis of Dietary Phenolic Antioxidants for Metabolic Disorders".
67. Hebrew University; Rehovot; Israel; May 2005 "Design of Functional Foods to Manage Human Health".
68. Taiwan Agricultural Research Institute, Taichung, Taiwan; June 2005; "Regulatory Policy Issues in GM Food and Environmental Safety".
69. American Corner, Taichung, Taiwan; June 2005; "Next Generation Food Biotechnology to Manage Human Health".
70. Department of Health, Taiwan; June 2005; " Microbial and GM Food Safety Challenges and Regulatory Issues".
71. American Institute of Taiwan and Taiwan Biotechnology Association, Taiwan; June 2005; " Commercialization of Biotechnology: The Challenges".
72. American Institute of Taiwan and Taiwan Biotechnology Association, Taiwan; June 2005; " University-Led Commercialization and IP Development: The Role of Bayh-Dole Act".
73. American Chamber of Commerce, Taipei, Taiwan; June 2005; " Commercialization of Biotechnology: The Challenges".
74. Taipei International Food Show, Taipei, Taiwan; June 2005; "Next Generation Food Biotechnology to Manage Human Health".
75. Karolinska Institute, Department of Medical Nutrition, Stockholm; Sweden; June, 2005; "Novel Regulation of Cellular Antioxidant Response for Chemoprevention of Diseases".
76. Danish Chamber of Commerce and US Embassy, Copenhagen, Denmark; June 2005; "Next Generation Food Biotechnology to Manage Human Health".
77. Royal Veterinary and Agricultural University, Fredricksberg, Denmark; June 2005; "Next Generation Food Biotechnology to Manage Human Health".
78. University of Life Sciences, As, Norway; June 2005; "Next Generation Food Biotechnology to Manage Human Health".
79. University of Sao Paulo; Sao Paulo, Brazil; July 2005; "Biotechnology Strategies to Design Functional Foods".
80. University of Campinas; Campinas, Brazil; July 2005; "Next Generation Food Biotechnology to Manage Human Health".

81. University of Londrina, Parana, Brazil; July 2005; "Next Generation Food Biotechnology to Manage Human Health".
82. University of Chile, Santiago, Chile; July 2005; "Biotechnology Strategies to Design Functional Foods".
83. Jeju National University, Jeju Island, South Korea; August, 2005; Workshop on "Biotechnology Strategies to Design Functional Foods".
84. International Seminar "Experiences de Empresas Biologicas de America Latina y el Caribe"; Bogota, Columbia; October 2005; "Commercialization Strategies in Life Sciences and Biotechnology: The Challenges".
85. International Seminar on Innovations and Commercialization in Biotechnology in Latin America; Santiago, Chile; December 2005 "Commercialization Strategies in Life Sciences and Biotechnology: The Challenges".
86. National Symposium on Biotechnology- "Bridging the Industry-Academia Gap", Organized by St. Aloysius College, Mangalore, India, January, 2006 "Current Developments in Food Biotechnology".
87. International Conference on Biotechnology Approaches for Alleviating Malnutrition and Human Health, Organized by University of Agricultural Sciences, Bangalore, Purdue University and USAID in Bangalore, India, January, 2006 "Advances in Molecular Nutrition: Integration of Phytochemicals and Antioxidant Response Pathways".
88. National Research Foundation of Greece, Athens, Greece; March, 2006, "Food Biotechnology: Design of Functional Foods to Manage Human Health."
89. Aristotelian University of Thessaloniki, Greece; March 2006 "Preventive Management of Disease and Phytochemicals: A New Perspective".
90. Food Chemistry and Plant Research International, Wageningen, Netherlands (Holland); April 2006 "Phytochemicals and Functional Food Applications".
91. Animal Sciences Group, Wageningen UR at Lelystad, Netherlands (Holland); April 2006 "Phytochemicals for Functional Foods and Animal Health".
92. Symposium on "Development of Industrial Materials with High Value from Natural Resources" at Daegu University and Sang-Ju National University, S. Korea; May 2006 "Biochemical Strategies to Design Functional Foods to Manage Human Health".
93. *In vitro* Biology Meeting, Minneapolis, MN, USA; June, 2006 "Advances in Molecular Nutrition: Role of phytochemicals and antioxidant response pathways"
94. University of Londrina, Parana State, Brazil; June, 2006 Food Biotechnology, Lecture series on "Emerging Concepts in Functional Foods and Food Safety".
95. University of Sao Paulo, Brazil; June, 2006 Food Biotechnology, Lecture series on "Emerging Concepts in Functional Foods and Food Safety".
96. Hokkaido University, Sapporo, Japan; International Symposium on Sustainable Development, August, 2006 "Sustainable Food Production: Integration of Emerging Global Food, Health and Environmental Challenges".

97. VI International Congress of Food Safety, Guadalajara, Mexico; Organized by CIATEJ and CONACYT, August, 2006 "Microbial Food Safety Challenges in an Era of Diet-Related Disease Problems and Global Trade".
98. Cheju National University; Jeju Island, South Korea; October 2006; Seminar series on "Recent Advances in Functional Ingredient Design & Applications".
99. Iowa State University, Ames, IA, USA; November 2006: Role of Proline-Linked Redox Pathways for Food, Feed and BioFuel Applications".
100. Indigenous Farming and Food Conference, White Earth, MN, USA; February 2007: "Benefits of Indigenous and Traditional Foods for Human Health".
101. MATFORSK (Norwegian Food Research Center) & UMASS Workshop, Aas, Norway; March 2007: "Global Food Diversity to Combat Diet-Linked Chronic Diseases and Better Health" and "Optimization of Phenolic Antioxidants in Diverse Food Systems for Better Health".
102. Institute of Food Technology, Annual Meeting Chicago, IL; July 2007: "Value-added biochemical strategies in Indian subcontinent diet design for disease prevention" Session: "Foods from the Indian subcontinent that Inherently Promote Wellness and Reduce Disease Risk".
103. Kemin Industries, Inc., Des Moines, IA, USA: August 2007: "Metabolic Biology of Phenolic Phytochemicals from Lamiaceae for Functional Ingredients".
104. Pioneer Valley Life Science Institute, Springfield, MA, USA: September 2007: "Redox Pathways for Diet Design to Manage Type 2 Diabetes".
105. Proline Symposium: Proline Metabolism in Health & Disease, NCI-Frederick, MD, USA: September 2007: "Functional Food Design via Proline-Linked Redox Pathways to Counter Diet-Linked Chronic Disease Challenges".
106. Meeting of South Carolina Center for Botanical Medicine, Charleston, SC, USA: June 2008 "Redox Biology-Based Metabolic Innovations for Botanical Medicine".
107. American Chemical Society Meeting, Philadelphia, PA, USA: August 2008: "Small Fruit Phenolics and Relevance for Type 2 Diabetes and Hypertension Management".
108. Cornell University, Department of Food Science, Geneva, NY, USA: September, 2008: "Metabolic Innovations Using Cellular Antioxidant Response for Improvement of Functional Food Ingredients and Antimicrobials".
109. International Biotechnology Symposium, Dalian, China: October 2008: "Metabolic Innovations in Food Biotechnology for Plant Ingredients for Human Health Applications".
110. Food Biotechnology Seminar Series, University of Sao Paulo, Brazil: November, 2008: "Biotechnology Strategies for Plant-Based Functional Ingredients".
111. Harbin Institute of Technology, Harbin, China: March 2009: "Food Biotechnology and Food Systems Integration for Nitrate Pollution Removal in Cold Latitudes".
112. Pro Chile, Osorno City and University of Valparaiso, Chile: July 2009: "Metabolic Innovations for Phenolic Antioxidant-Enriched Functional Food Design".
113. Sineferm-National Bioprocessing Symposium of Brazil, Natal, RN, Brazil: August 2009: "Bioprocessing strategies and metabolic innovations for functional food ingredients".

114. International Symposium of Molecular Environmental Soil Science at the Interfaces in the Earth's Critical Zone ISMESS 2009, Hangzhou, China: October 2009: Initial Screening Studies on Potential of High Phenolic-Linked Plant Clonal Systems for Nitrate Removal in Cold Latitudes”.
115. The International Convention on Powder Technology and Products at Changxing, Zhejiang Province, China, October 2009: “Integration of Powder Technology and Microbial Food Bioprocessing for Functional Food and Food Safety Applications”.
116. New England Vegetable and Berry Conference, Manchester, New Hampshire, USA: December, 2009: “Phenolic Phytochemicals in Fruits and Vegetables are linked to Health Benefits”.
117. Central Agricultural University, College of Home Science, Tura, Meghalaya, India, June 7, 2010: “Emerging Challenges in Food Science and Nutrition and Opportunities for Higher Education and Research Careers”.
118. Eighth International Conference of World Association of Vedic Studies, Trinidad and Tobago; August 3-7, 2010, “Systems Biology Meets Vedic Wisdom for Global Food Security and Universal Healthcare”, WAVES 2010.
119. American Chemical Society Meeting, Boston, MA, USA; August 24, 2010, “Phenolic antioxidant-enriched plant foods for prevention and management of type 2 diabetes and its complications”.
120. ILSI Brazil – International Life Sciences Institute - IV International Symposium on Functional Foods, São Paulo, Brazil, October, 2010. “Phenolic Phytochemicals & Cellular Redox Biology for Dietary Prevention of Chronic Diseases”.
121. National Academy of Science and Technology, Kathmandu, Nepal, December 2010. “Systems Biology-Based Strategies for Global Food Security and to Combat Diet-Linked Chronic Disease Challenges”.
122. United Arab Emirates University at Al Ain, UAE, March, 2011. "Innovations in Biotechnology for Functional Foods Based on Understanding of Cellular Redox Biology”.
123. New Medical Center-Neopharma, Musafa, Abu Dhabi, UAE, March 2011. "Innovations in Biotechnology for Functional Foods Based on Understanding of Cellular Redox Biology”.
124. Harvard Medical School, Conference on Practical Approaches to the Treatment of Obesity; June, 16-18, 2011, Cambridge, MA, USA. “Interface of Metabolomics & Nutrigenomics Shaped by Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases”.
125. All India Management Association-AIMA Conference on Inclusive Healthcare Management for Sustainable Development: August, 2011, Bangalore, India. "Innovations for Healthy Food Systems to Manage Diet-Linked Chronic Diseases and Advance Sustainable Development in India”.
126. National University of Mongolia, Ulaan Baatar, Mongolia, August, 2011 Seminar, “Perspective on World Food Systems for Advancing Sustainable Developmental Strategies”.
127. National University of Mongolia, Ulaan Baatar, Mongolia, August, 2011 Seminar “Biotechnology and Metabolic Biology of Functional (Medicinal) Foods Based on Understanding of Redox Biology for Sustainable Development”.
128. North Dakota State University, Fargo, ND, USA. Nov, 2011 Seminar: “Internationalization of Higher Education and the Innovation Economy: Emerging Global Partnerships”.

129. North Dakota State University, Fargo, ND, USA. Nov, 2011 Seminar, "Integration of Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases".
130. Qatar University, Doha, Qatar. Jan 2012 Seminar, "Integration of Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases".
131. University of Massachusetts, Department of Chemistry and Biochemistry, Dartmouth, MA, USA. Feb 2012. Seminar: "Integration of Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases: Type 2 Diabetes as Model"
132. Summer Research Forum: *Dietary Factors and Long-Term Consequences for Health*, May 14-16, 2012 North Dakota State University, Fargo, ND, USA. "Integration of Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases: Type 2 Diabetes as Model".
133. International Seminar in Advances in Molecular Genetics and Biotechnology for Public Education at Atma Jaya Catholic University, Jakarta, Indonesia. June 2012 "Redox Biology as the Basis for Metabolic Innovations in Food Biotechnology"
134. Food Ecology Forum at Eden Project, Cornwall, UK, July 2012 "Integration of Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases: Type 2 Diabetes as Model"
135. Prince of Songkla University, Faculty of Agro-Industry, Hat Yai, Thailand, July 2012. "Redox Biology as the Basis for Metabolic Innovations in Food Biotechnology"
136. Catholic University of Valparaiso, Faculty of Food Engineering., Chile, August 2012 "Application of Metabolic Innovations in Food Biotechnology for Functional Food Applications".
137. Catholic University of Valparaiso, Valparaiso, Chile; Public Lecture, August 2012 "Integration of Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases: Type 2 Diabetes as Model"
138. III International Symposium on Medicinal and Nutraceutical Plants (3ISMNP) along with III Conference of National Institute of Science & Technology for Tropical Fruits, Aracaju, Sergipe, Brazil. October 2012 "Integration of Redox Biology to Design Functional Foods to Combat Obesity-Linked Chronic Diseases: Type 2 Diabetes as Model Using Crops Relevant to Brazil" & Round Table on "Benefits of Antioxidant Rich Foods".
139. 5th International Congress on Food Science and Food Biotechnology in Developing Countries, Puerto Vallarta, Mexico, October 2012 "Redox Biology-Based Metabolic Innovations to Design Functional Foods"
140. BioMalaysia, 2012, Kuala Lumpur, Malaysia, November 2012 "Redox Biology Platform for Innovations in Life Sciences: A concept for Biotechnology and Metabolic Biology of Functional Foods"

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141. AOCS 104<sup>th</sup> Annual Meeting and Expo, Montreal, Canada, April 2013. "Biotechnology and Food Security with Focus on Metabolic Innovations for Malnutrition and Chronic Disease Management" in the Forum on Emerging Technologies: Ensuring Global Food Security.
142. American Council of Medicinally Active Plants (ACMAP), 4<sup>th</sup> Annual Conference, University of Massachusetts, Amherst, MA, USA: June 2013. Plenary Lecture "Strategies for Improving Medicinal Plants Using Metabolic Biology".

143. 7th INTERNATIONAL FOOD CONVENTION (IFCON) "NSuRE HEALTHY FOODS" (Nutritional Security through Sustainable Development, Research & Education for Healthy Foods); Dec 18 - 21, 2013, CSIR-CFTRI Campus, Mysore, Karnataka, India. Lecture "Food Security Solutions to Address Global Malnutrition and Chronic Disease Challenges Using Systems-Based Plant Metabolic Innovations".
144. University of Pondicherry, India; Department of Food Science and Technology, January 2014, "Systems-Based Plant & Food Metabolic Innovations to Address Global Food Security & Health Challenges"
145. Prince of Songkla University at Phuket Campus, Thailand, January 2014 at Phuket Sustainability Conference, Seminar on "Systems-Based Innovations to Address Food Security, Health & Ecological Challenges".
146. University of Mysore, India: Center for Studies in Microbiology, March 2014 "Systems-Based Plant & Food Metabolic Innovations to address Global Food Security & Health Challenges".
147. Zhejiang University, Hangzhou, China; Fuli Institute of Food Science and Nutrition, May 2014 "Metabolic Biology of Bioactive Components of Traditional & Future Foods".
148. Uttarkhand University of Horticulture and Forestry, Ranichuri, India, May 2014 "Systems-Based Innovations as Solutions to Global Food Security & Health Challenges".
149. American Council of Medicinally Active Plants (ACMAP) 5<sup>th</sup> Annual Conference at North Dakota State University, Fargo, ND, USA, June 2014 Forum on "Crops for Health as Solution to Chronic Diseases: Strategic Vision for Agriculture and Global Food Security".
150. Chile Tree Nuts Association Conference in Vina Del Mar, Chile, June 2014, "Food ecology and Food diversity as rationale to integrate bioactive and functional foods for advancing better human health and global environment".
151. Kagoshima University, Japan at College of Agriculture, July 2014 "Systems Strategies for Solutions to Global Food Security: from Plant Biology to Human Health".
152. Udayana University, Denpasar, Bali, Indonesia, September, 2014 ""Metabolic Innovations and Food Diversity-Linked Solutions for Global Food Security".
153. 24<sup>th</sup> Brazilian Food Science Congress and International Conference on Tropical Fruits, September 2014, Aracaju, Brazil, "Metabolic Biology & Biotechnology of Tropical Fruit Phytochemicals for Functional Foods & Human Health".
154. Prince of Songkla University, Hat Yai, Thailand October, 2014 "Systems Metabolic Innovations to Address Global Food Security & Health Challenges".
155. Cornell University, Ithaca, NY, October, 2014 Institute of Science for Global Policy-Cornell University Conference debate presentation "Systems Solutions to Global Food Security Challenges to Advance Human Health and Global Environment Based on Diverse Food Ecology".
156. 6th International Congress on Food Science and Food Biotechnology, Monterrey, Mexico, October 2014 ""Strategic Vision for Advancing Global Food Security: A New Initiative for International Partnerships and Collaboration at North Dakota State University".
157. Pennsylvania State University, State College, PA, USA November 2014 "Systems-Based Plant & Food Metabolic Innovations to address Global Food Security & Health Challenges".

158. Beary Institute of Technology, Mangalore, India February 2015 ““Systems-Based Understanding of Global Food Security Challenges with Integration of Urban Living & Green Technologies”.
159. American Council of Medicinally Active Plants (ACMAP) 6th Annual Conference at Washington State University, Spokane, WA, USA, May 2014 “Metabolic Biology of Bioactive Medicinal Foods from American Indian Food Systems”.
160. Thailand Food Ingredient Conference, Bangkok, Thailand, September, 2015 “Metabolic Innovations of Phytochemicals for Health”.
161. Pharmaceutical Sciences, AAPS Conference, NDSU, Fargo, ND September 2015, "Metabolic Innovations for Developing Functional Foods for Countering Chronic Diseases".
162. Symbiosis University, Pune, India; Program in Biomedical Sciences and Nutrition, October, 2015, “Systems-Based Metabolic Innovations for Global Food Security & Public Health Challenges”.
163. Texas A & M University, October, 2015 “Systems-Based Metabolic Innovations for Global Food Security & Public Health Challenges”.
164. Sikkim University, Gangtok, India, November, 2015 International Conference on “Ethnic Fermented Foods and Beverages: Microbiology and Health Benefits” “Metabolic Basis for Fermented Foods for Health and Food Security”.
165. Symbiosis University, Pune, India, January, 2016 Symposium on Recent Advances in Biomedical Sciences; “Metabolic Innovations for Global Food Security & Public Health Challenges”.
166. 19th ADNAT Convention, International Symposium on Microbiome in Health and Disease; Bangalore, India, 23rd - 25th February, 2016, “Fermented Food Microbiome for Chronic Disease Management”
167. Food for Health International Conference, Kagoshima University, Japan, March 20-23, 2016, “Metabolic Innovations for Fermented Foods as Functional Microbiomes & Bioactives for Human Health”.
168. American Council of Medicinally Active Plants, 7<sup>th</sup> Annual Conference, Lima, Peru, June 28-July 2, 2016, “Metabolic Innovations and Fermentation Biology for Medicinally Active Functional Foods”.
169. International Conference on Biosciences 2016 –Advancing Biodiversity for Sustainable Food Security, Udayana University, Bali, Indonesia, July 25-27, 2016 “ Food Diversity and Fermented Microbiome Diversity to Address Global Food Security Challenges”.
170. Agricultural Bioscience International Conference, September 20-23, 2016 in Fargo, ND “Food Metabolic Innovations to Advance Global Food Security and Associated Chronic Disease Challenges”.
171. IAFP's 5th Latin American Symposium on Food Safety & 7th Food Science, Biotechnology and Safety in Cancun, Mexico, November 9-11, 2016. “Food Diversity and Microbiome Enhancement to Traditional Food Systems as Solutions to Global Food Security and Public Health Challenges”.
172. The 28th Annual Meeting of the Thai Society for Biotechnology and International Conference. "Natural Resources and Bio-based Innovative Products", November 28-30, 2016 in Chiangmai, Thailand “Metabolic Innovations for Food microbiome for Global Food Security and Health”.
173. American Chemical Society National (253 rd) Meeting & Exposition, San Francisco, CA, April 2-6, 2017. “Metabolic and Microbiome Innovations for Improving Phenolic Bioactives for Health”.

174. 10th International Convention of Asia Scholars (ICAS10), July, 2017, at Chiang Mai, Thailand; Panel Chairman and Presentation on "Food Security and Cultural Relevance of Traditional Fermented Food Systems of ASIA Facing Climate Change".
175. The 13<sup>th</sup> Asian Congress on Biotechnology (ACB 2017) "Bioinnovation and Bioeconomy", Khon Kaen, Thailand , July , 2017; "Metabolic Innovations to Develop Food Microbiome for Global Food Security and Health Solutions".

### **Editorship**

- 1) Editor-in Chief, "**Food Biotechnology**"- Taylor and Francis, UK/USA
- 2) Editor of "**Journal of Food Science and Technology**" (Springer-AFSTI, India)
- 3) Editor of "**Food Biotechnology Series**" (Taylor & Francis) with Dipayan Sarkar

### **Editorial Boards**

- 1) Editorial Board of "**Journal of Food Biochemistry**"-Wiley-Blackwell Publishers, USA
- 2) Editorial Board of "**Journal of Medicinally Active Plants**" Journal of the American Council of Medicinally Active Plants
- 3) Editorial Board of "**Journal of Medicinal Food**"-Mary Ann Liebert Publishers
- 4) Editorial Board of "**Journal of Ethnic Foods**" (Elsevier)

### **Completed:**

- 1) Inaugural Editorial Board (2008-2012) of "**Annual Review of Food Science and Technology**", Annual Reviews Series, CA, USA
- 2) Editorial Board (2000-2013) of "**Innovative Food Science and Emerging Technologies**"-Elsevier

### **Book Editor**

**Food Biotechnology, 2<sup>nd</sup> Edition, 2005** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (Eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL.

**Functional Foods and Biotechnology, 2006** [Shetty, K., Paliyath, G., Pometto, A.L. III and Levin, R.E. (Eds)]. CRC Press (Taylor and Francis Co), Boca Raton, FL.

**Functional Foods, Nutraceuticals and Degenerative Disease Prevention. 2011** (Paliyath, G., Bakovic, M. and Shetty, K. (Eds)).ISBN-13: 978-0-8138-2453-6 - John Wiley & Sons, NY.