

Dr. K.M. Maria John

Post Doc.

Lab of Functional Metabolomics

Konkuk University, 1 Hwayang-dong,

Gwangjin-gu,

Seoul 143-701

(+82) 010 – 4046 1979

mariyajoy@gmail.com

OBJECTIVE

To be a part of an organization which uses my skills and expertise in its propensity to grow and develop while availing myself of every opportunity to learn and enrich my competencies.

EXPERIENCE

Post Doc : Konkuk University, Seoul, South Korea (2011 March till date)

Postdoc at Lab of Functional metabolomics

- Terpenoid biosynthesis in transgenic (OsCCD 1 & 4) rice by LC-MS/MS and UPLC-Q-TOF-MS analysis
- Carotenoids and its cleavage metabolites in transgenic rice (OsCCD1 & 4) lines by LC-MS/MS and UPLC-Q-TOF-MS
- Secondary and primary metabolite changes in Soybean infected by different fungal sps. – analysed by UPLC-Q-TOF-MS and GC-TOF-MS
- Mevalonate path way intermediates analysis in *E.coli* for optimizing Santalene and taxadiene production - UPLC-Q-TOF-MS

Doctor of Philosophy : Bharathiar University, Coimbatore, TN, India (2004 – 2007)

UPASI Tea Research Institute, Valparai

Exploitation of *in vitro* cultures of tea (*Camellia sinensis* (L.) O. Kuntze) for the production of secondary metabolites

Senior Research Fellow : 6 Years (2001 – 2007)

Dept. Biotechnology, UPASI Tea Research Institute, Valparai

August 2006 to March 2007: **DBT** “Improvement of tea through biotechnological tools”.

- Molecular characterization of Tea clones (RAPD, RFLP)

December 2001 to July 2006: **CSIR** “Functional genomics in plants: Niche pathway engineering in tea”.

- Catechin biosynthesis in tea (HPLC and 14C labeled studies)
- Screening of high secondary metabolite containing Tea plant from the seedlings by HPLC
- Antioxidant and antimicrobial activity of individual catechin molecules
- Hairy root from tea for secondary metabolite biosynthesis

Teaching : 2.6 Year (2008 – 2010) B.Tech and M.Tech Biotechnology

January 2010 to 2011 March: Asst. Professor, Department of Biotechnology, SRM University, Kattankulathur, TN, India

July 2008 to January 2010: Asst. Professor, Department of Biotechnology, Karunya University, Coimbatore, TN, India

*LIST OF PUBLICATIONS

Published papers	: 21
Patent	: 1 (692/CHE/2011) - Use of aqueous extract of <i>Ormocarpum cochinchinense</i> plant for bone healing
Book (Edited)	: 1 (Innovations and challenges in Biotechnology)
Accepted papers	: 03 + (03 – under progress)

EDUCATION

2004 – 2007: Doctor of Philosophy: Thesis on “**Exploitation of *in vitro* cultures of tea (*Camellia sinensis* (L.) O. Kuntze) for the production of secondary metabolites**” from Bharathiar University, Coimbatore.

1999 – 2001: Master of Science in Botany (First class) from VHNSN College, Virudhunagar (Madurai Kamaraj University)

KEY SKILLS AND ACHIEVEMENTS

- Electro-focusing method (using agarose gel) was developed for the separation of catechins in tea.
- Drought resistant tea plants are produced through transformation using *Agrobacterium tumefaciens* (GV 2260 plasmid).

HANDS ON TECHNIQUES

- **Biochemical analysis:** LC-MS/MS, GC-MS/MS, UPLC-Q-TOF-MS, GC-TOF-MS based metabolic profiling, Free radical damaging studies (DPPH, plasmid and animal DNA), Oxidative enzyme assays, *etc.* (HPLC, Gas Chromatography, Fermentor, lyophiliser, fraction collector, scintillation counter, flame photometer, UV Vis)
- **Molecular biology:** Experienced in advanced molecular techniques like RAPD, RFLP, AGE& PAGE electrophoresis, southern blotting, RNA/DNA isolation, PCR based gene identification and gene transfer technology in plants (Biolistic method - PDA 1000), *etc*
- **Tissue culture:** Well versed in cloning, single cell culture, haploid production, protoplast fusion, somatic embryogenesis, production of somaclonal variance, synthetic seeds and hairy root cultures., *etc*

TRAINING UNDERWENT

2005 - Training on Biolistic method of plant transformation, Microcrafting and Hardening in tea at Biotechnology division of Institute of Himalayan Bioresource Technology (CSIR), Palampur.

SEMINARS AND CONFERENCE ORGANIZED/ ATTENDED

* **Organized three day training program** on HPLC Analytical Techniques at Karunya University on January 6 - 9, 2010.

* **Organized an International Conference on Biotechnology** "Innovations and challenges in Agri, Food, Biofuel and Health care" (ICBIC - 2008) on 11th & 12th December 2008 at Karunya University.

* Free radical scavenging activity of *Catharanthus roseus* root extract against DNA damages, **Medicinal plants and herbal drugs** conference. Pachaiyappa's College, Chennai

* *In vitro* studies on substrate specific catechin biosynthesis in tea (*Camellia sinensis* (L) O Kuntze), 2004, **UPASI Annual Tea Colloquium**

* *In vitro* secondary metabolite production in tea through hairy root cultures, 2005, **UPASI Annual Tea Colloquium**

* Potential role of individual catechin molecules of tea in protection of DNA damages in **PLACROSYM** (an International Conference on Plantation Crops)

* Potentials of Some Indian and Exotic Plants as Nutraceuticals. **Herbal World Expo-2008**. held in Kuala Lumpur, Malaysia. November 27th – 30th 2008.

* Hazardous Effects of Medicinal Plants. In Proc. International Conference on Innovations and Challenges in Biotechnology. 2009; 183- 187.

ADDITIONAL SKILLS

- Data analysis using various software packages (SIMCA P, Statistica+, SPSS and Total lab V 1.0)

PERSONAL DETAILS

Date of birth & Age : 24.04.1979 (33)
 Marital status : Married
 Nationality : Indian
 Languages known : English and Tamil

REFERENCES

Dr. Philomena George	Dr. A.K.A. Mandal
Professor	Associate Professor
Dept. of Biotechnology	Dept. of Biotechnology
Karunya University	VIT University
Coimbatore 641 114.	Vellore
drphil2006@gmail.com	akamandal@yahoo.co.in
Phone: +91 96008 98379	
Fax: +91 422 2615615	

LIST OF PUBLICATIONS*Papers published in International Journals**

1. Jiyoung Kim, Jung Nam Choi, **K. M. Maria John**, Miyako Kusano, Akira Oikawa, Kazuki Saito and Choong Hwan Lee. GC-TOF-MS- and CE-TOF-MS-Based Metabolic Profiling of Cheonggukjang (Fast-Fermented Bean Paste) during Fermentation and Its Correlation with Metabolic Pathways. *Journal of agricultural and food chemistry*. 2012, 60, 9746-9753
2. Jung Nam Choi, Jiyoung Kim, Kannan Ponnusamy, Chaesung Lim, Jeong Gu Kim, **Maria John Muthaiya** and Choong Hwan Lee. Identification of a novel Phomoxanthone antibiotic by metabolite profiling of *Phomopsis longicolla* and its antimicrobial correlation with other metabolites during fermentation. *Journal of antibiotics* -2012 (in press)
3. M. Dinesh Kumar, **K.M. Maria John*** and S. Karthik- The Bone Fracture Healing Potential of *Ormocarpum cochinchinense* (L.) (Traditional Bone Healing Aid of Tamil Nadu) Methanolic Extract on Albino Wistar Rats. - *Journal of Herbs, Spices & Medicinal Plants*. 2012 (in press)

4. **K.M. Maria John**, Praveen N, and R.Premkumar. Enhancement of the productivity of tea (*Camellia sinensis*) secondary metabolites in cell suspension cultures using pathway inducers. *Industrial Crops and Products*. (accepted)
5. Son Gun Hee, Jiyoung Kim, **Maria John Muthaiya**, Sarah Lee, Hyang Yeon Kim, and Choong Hwan Lee. Antimicrobial Compounds Profile During Cheonggukjang Fermentation Against *Xanthomonas oryzae* pv. *Oryzae* (Xoo). *J. Microbiol. Biotechnol.* 2011, 21(11), 1147–1150
6. **K.M. Maria John***, Jibu Thomas, R. Raj Kumar and A. K. A. Mandal. Effect of additives on the free radical scavenging activity of black tea liquor. 2009, *International Journal of Food Science & Technology*: 2009, vol. 44. 2070-2074
7. **K.M. Maria John***, S.D. Joshi, S. Ram Kumar, R. Raj Kumar and A.K.A. Mandal. *Agrobacterium rhizogenes* - mediated hairy root production in tea leaves (*Camellia sinensis* (L.) O. Kuntze). *Indian Journal of Biotechnology*, 2009 Vol 8: 430-434
8. **K. M. Maria John**, Deepu Vijayan, P. R. Rahul, S. D. Joshi, R. Raj Kumar, and A. K. A. Mandal. Electrofocusing of methanolic extracts for identification of individual flavonol biomolecules in *camellia* species. *Journal of agricultural and food chemistry*. 2006. 54 (8): 2828-2831
9. M. Saravanan, **K.M. Maria John**, R. Raj Kumar, P.K. Pius, R. Sasikumar. Genetic diversity of UPASI tea clones (*Camellia sinensis* (L.) O. Kuntze) on the basis of total catechins and their fractions. *Phytochemistry* 66 (2005): 561–565

Scopus indexed

10. **K.M. Maria John** and R. Premkumar. Principal Component Analysis based Clustering of UPASI Tea Cultivars for their Diversity on Free Radical Scavenging Activity. *Research Journal of Phytochemistry*, 2012, 6 (1); 1-8
11. **K.M. Maria John**, Deepa venkatesan, S.Sandhiya, S. Karthik and Sampath Natarajan. *In vitro* synthesis of calcite crystals from *Ormocarpum cochinchinense* (L) a traditional bone healing aid of southern India. *American Journal of Plant Physiology*: 2011, 6 (6); 312-317
12. **K.M. Maria John**, R. Sasikumar, Deepu Vijayan, P.R. Rahul, M. Saravanan and R. Raj Kumar. Influence of externally added substrates on total catechin content in tea leaves (*Camellia* spp.) *Asian Journal of Plant Sciences*. 2006. 5 (1): 116-119.
13. **K.M. Maria John**, Deepu Vijayan, R. Raj Kumar and R. Premkumar. Factors influencing the efficiency of extraction of polyphenols from young tea leaves. *Asian Journal of Plant Sciences*. 2006. 5 (1): 123-126.

Others

14. **K.M. Maria John**, R. Sasikumar, M. Balasubramanian, M. Saravanan, R. Raj Kumar. Influence of light on catechin biosynthesis in tea. *Kenyan Journal of Tea*, 2003. 24(2):80-86.

Papers published in National Journals

15. **K.M. Maria John**, J. Rajesh, A.K.A. Mandal and Sampath Natarajan. Antioxidant and antimicrobial activity of individual catechin molecules: A comparative study between gallated and epimerized catechin molecules. *European Journal of Experimental Biology*, 2011, 1 (3):145-153

16. **K. M. Maria John**, Tessy Ann Sunny, Nivya Ani Mangalam and Leena Abraham Potential role of Barbaloin molecules of *Aloe vera* in protection of DNA damages from hydroxyl radicals - *International Journal of Pharmagenesis* 2010. 1 (1): 1 – 5.

17. **K.M. Maria John** and R.Raj Kumar. Factors influencing synthetic seed germination in tea (*Camellia sinensis* (L.). O. Kuntze). *Journal of Plantation Crops*. 2006. 34 (1): 40 – 42

18. **K.M. Maria John**, Deepu Vijayan, R. Sasi Kumar, M. Saravanan and R. Raj Kumar. *In vitro* studies on substrate specific catechin biosynthesis in tea (*Camellia sinensis* (L.) O. Kuntze). *Journal of Plantation Crops*. 2006. 34 (2): 128-131

19. **K.M. Maria John**, S.D. Joshi, A.K.A. Mandal, R.Raj Kumar and R. Prem Kumar. Potential role of tea catechins in protection of DNA from free radical damage. *Journal of Plantation Crops*. 2006. 34 (3): 597-600

20. Deepu Vijayan, **K. M. Maria John**, T. Balasaravanan, P. K. Pius and R. Raj Kumar. Influence of dehydration methods for cryopreservation of somatic embryos of tea. *Journal of Plantation Crops* 2005. 33 (3): 156 - 159.

21. Deepu Vijayan, **K.M. Maria John**, Vinod Haridas and R. Raj Kumar. Direct Shoot Induction from the root explants of tea (*Camellia sinensis* (L.) O. Kuntze). *Journal of Plantation Crops*, 2004. 32: 123-126

Papers in review

22. Jiyoung Kim, Jung Nam Choi, Joo Hee Choi, Youn Soo Cha, **K.M. Maria John**, and Choong Hwan Lee. Metabolic Examination of Fermented Soybean Product (Cheonggukjang) Intake on High-fat Diet-fed Mice. *Journal of agricultural and food chemistry*. (in review)

23. Jung Nam Choi, Jiyoung Kim, Kannan Ponnusamy, Chaesung Lim, Jeong Gu Kim, **Maria John Muthaiya** and Choong Hwan Lee. Phomopsis longicolla metabolic changes during fermentation and its antimicrobial correlations. J. Microbiol. Biotechnol. (in review)
24. Min Ju Kim, **K.M. Maria John**, Jung Nam Choi, Sa Rah Lee, Ah Jin Kim, Young Mi Kim, Choong Hwan Lee. Secondary metabolites shift during fermentation of green tea by Aspergillus oryzae and its effect on antioxidant potentiality. Food Research international (in review)

Papers in progress

25. **K.M. Maria John**. Targeted metabolic profiling of carotenoids and its cleavage metabolites in CCD expressed transgenic rice (Oryza sativa L.) lines by liquid chromatography-tandem mass spectrometry analysis
26. **K.M. Maria John**. Exploring terpenoid metabolites of CCD expressed transgenic rice (Oryza sativa L.) lines based on liquid chromatography-tandem mass spectrometry and Q-TOF analysis
27. **K.M. Maria John**. A metabolic approach to determine the differential expression of pyrophosphate intermediates of mevalonate pathway in engineered E.coli analysed by UPLC-Q-TOF.