

# Dr. K. Anbarasu

## Assistant Professor

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## Education

### PhD in Biotechnology (2008 – 2014)

CSIR-Central Food Technological Research Institute, University of Mysore

### M.Sc., in Biotechnology (2002 – 2004)

Periyar University, Salem

### B.Sc., in Microbiology (1999 – 2002)

Sengunthar Arts & Science College, Trichengode (Periyar University, Salem)

## Publications

- Nunta, R., Khemacheewakul, J., Techapun, C., Sommanee, S., Feng, J., Htike, S.L., Mahakuntha, C., Porninta, K., Phimolsiripol, Y., Jantanasakulwong, K., Moukamnerd, C., Watanabe, M., **Kumar, A.** and Leksawasdi, N. 2023. Kinetics of Phosphate Ions and Phytase Activity Production for Lactic Acid-Producing Bacteria Utilizing Milling and Whitening Stages Rice Bran as Biopolymer Substrates. *Biomolecules*, 13(12), p.1770.
- Feng, J., Techapun, C., Phimolsiripol, Y., Phongthai, S., Khemacheewakul, J., Taesuwan, S., Mahakuntha, C., Porninta, K., Htike, S.L., **Kumar, A.** and Nunta, R., 2023. Utilization of agricultural wastes for co-production of xylitol, ethanol, and phenylacetylcarbinol: A review. *Bioresource Technology*, p.129926.
- Kumar, A.**, Techapun, C., Sommanee, S., Mahakuntha, C., Feng, J., Htike, S.L., Khemacheewakul, J., Porninta, K., Phimolsiripol, Y., Wang, W. and Zhuang, X., 2023. Production of Phenylacetylcarbinol via Biotransformation Using the Co-Culture of *Candida tropicalis* TISTR 5306 and *Saccharomyces cerevisiae* TISTR 5606 as the Biocatalyst. *Journal of Fungi*, 9(9), p.928.
- Nunta, R., Khemacheewakul, J., Sommanee, S., Mahakuntha, C., Chompoo, M., Phimolsiripol, Y., Jantanasakulwong, K., **Kumar, A.** and Leksawasdi, N. 2023. Extraction of gymnemic acid from *Gymnema inodorum* (Lour.) Decne. leaves and production of dry powder extract using maltodextrin. *Scientific Reports*. 13:11193.
- Kanthiya T, Thajai N, Chaiyaso T, Rachtanapun P, Thanakkasaranee S, **Kumar A**, Boonrasri S, Kittikorn T, Phimolsiripol Y, Leksawasdi N, Tanadchangsaeng N. 2023. Enhancement in mechanical and antimicrobial properties of epoxidized natural rubber via reactive blending with chlorhexidine gluconate. *Scientific Reports*. 13(1):9974.
- Chailangka, A., Leksawasdi, N., Ruksiriwanich, W., Jantanasakulwong, K., Rachtanapun, P., Sommano, S.R., Khaneghah, A.M., Castagnini, J.M., Barba, F.J., **Kumar, A.** and Phimolsiripol, Y. 2023. Natural ingredients and probiotics for lowering cholesterol and saturated fat in dairy products: an updated review. *Quality Assurance and Safety of Crops & Foods*, 15(2): 140-160.
- R. Nunta, C. Techapun, S. Sommanee, C. Mahakuntha, K. Porninta, W. Punyodom, Y. Phimolsiripol, P. Rachtanapun, W. Wang, X. Zhuang, W. Qi, K. Jantanasakulwong, A. Reungsang, **A. Kumar**, N. Leksawasdi. 2023. Valorization of rice straw, sugarcane bagasse and sweet sorghum bagasse for the production of bioethanol and phenylacetylcarbinol, *Scientific Reports*, 13(1): 727.
- Govindan, S.P., Senthamarai, R. and **Anbarasu, K.**, 2021. Quality by design-based evaluation and optimization of ceftibuten flexible dispersible tablet design with high drug loading using Design-Expert software. *Journal of Research in Pharmacy*, 25(3): 341-351.
- Govindan, S.P., Senthamarai, R. and **Anbarasu, K.**, 2021. Design of Flexible Dispersible Tablet with high drug loading using quality by Design: Proof of Concept study using third generation Cephalosporins Model Drug. *Research Journal of Pharmacy and Technology*, 14(2): 705-714.
- Ahila Mathimaran, **Anbarasu Kumar**, Gurudayal Prajapati, Ravi S. Ampapathi, Himangsu K. Bora and Rajdeep Guha. 2020. Partially saturated canthaxanthin alleviates aging-associated oxidative stress in D-galactose administered male wistar rats. *Biogerontology*. 22(1): 19-34.

## Work Experience

### Postdoctoral Research Fellow

(2022 - 2023)

Chiang Mai University, Thailand

### Assistant Professor

(2016 - Present)

Department of Biotechnology, Periyar Maniammai Institute of Science & Technology, Thanjavur

### Postdoctoral Research Fellow

(2015 - 2016)

Universiti Putra Malaysia, Malaysia

### Project Assistant

(2006 - 2008)

CSIR-Central Food Technological Research Institute

### Project Assistant

(2004 - 2006)

CSIR-Central Food Technological Research Institute, Mysore

## Work Summary

Total Experience: 11 Years

Research Experience: 5 Years

Teaching Experience: 6 Years

Industrial Experience: 0

## Research Interests

- Fungal pigments
- Fungal enzymes
- Functional Foods
- Nutraceuticals
- Food Fermentation
- Biofuels

## Recognition and Achievements

- Reviewer for Journal of Food Science
- Reviewer for Pharmaceutical Biology
- Doctoral Committee Member for Research Scholars
- PhD Guidance - 2
- Masters Guidance - 1
- B.Tech Guidance - >10

11. Ahila Mathimaran and **Anbarasu Kumar**. 2020. Changes in morphogenesis and carotenogenesis to influence polygalacturonase secretion in *Aspergillus carbonarius* mutant. *Archives of Microbiology*. 3: 1-9.
12. **Anbarasu Kumar**, Ahila Mathimaran, Akshatha Hosahalli Shrikanta, and Vijayalakshmi Govindaswamy. 2018. Role of Partially Saturated Canthaxanthin and Ergosterol in the survival of *Aspergillus carbonarius* mutant at extreme acidic condition. *Microbiology*. 87(2): 183-190.
13. **Anbarasu Kumar**, Akshatha Hosahalli Srikanta, Anandharamkrishnan Chinnaswamy, Oi Ming Lai and Vijayalakshmi Govindaswamy. 2016. Encapsulation of partially saturated canthaxanthin - A functional ingredient from *Aspergillus carbonarius*. *Current Topics in Nutraceutical Research*. Nov 251-258.
14. Akshatha Hosahalli Srikanta, **Anbarasu Kumar**, Shinde Vijay Sukhdeo, Muthukumar Serva Peddha and Vijayalakshmi Govindaswamy. 2016. The antioxidant effect of mulberry and jamun fruit wines by ameliorating oxidative stress in streptozotocin induced diabetic Wistar rats. *Food and Function*. 7, 4422-4431.
15. Akshatha Hosahalli Srikanta, **Anbarasu Kumar** and Vijayalakshmi Govindaswamy. 2015. Resveratrol content and antioxidant properties of underutilized fruits. *Journal of Food Science and Technology*. 52: 383 - 390.
16. Marimuthu K, **Anbarasu Kumar**, Akshatha Hosahalli Srikanta and Vijayalakshmi Govindaswamy. 2014. Solid-state fermentation of agricultural by-products by *Monascus purpureus* for bioactive metabolites with antioxidant properties. *Journal of Bioprocess Engineering and Biorefinery*. 3: 150 - 159.
17. **Anbarasu Kumar**, Akshatha Hosahalli Srikanta, Muthukumar Serva Peddha, Umesh- Kumar Sukumaran and Vijayalakshmi Govindaswamy. 2012. A Short-term toxicity study of *Aspergillus carbonarius*. *International Journal of Toxicology*. 31(2): 158 - 165.
18. **Anbarasu Kumar**, Akshatha Hosahalli Srikanta, Muthukumar Serva Peddha, Umesh- Kumar Sukumaran and Vijayalakshmi Govindaswamy. 2011. Antioxidant and lipid peroxidation activities in rats fed with *Aspergillus carbonarius* carotenoid. *Food and Chemical Toxicology*. 49(12): 3098 - 3103.
19. Vikas Gupta, N.S. Vijayalakshmi, B. Ashwini, **Anbarasu Kumar**, G. Vijayalakshmi, Maya Prakash, A.R. Indiramma, G.C.P. Rangarao and B.S. Ramesh. 2010. Shelf-life enhancement of coconut burfi - An Indian traditional sweet. *Journal of Food Quality*. 33(3): 329-349.
20. **Anbarasu Kumar** and G. Vijayalakshmi. 2007. Improved Shelf life of protein rich Tofu using *Ocimum sanctum* (Tulsi) extracts to benefit Indian rural population. *Journal of Food Science*. 72(8): M300-M305.

## Research Funding/Grants Received

1. **Title:** *Aspergillus carbonarius* mutant in relation to partially saturated canthaxanthin biosynthesis  
**Scheme:** Young Scientist Scheme  
**Grant:** Rs. 1890000/-  
**Funding agency:** Department of Science and Technology (DST)  
**Period:** 3 Years (April, 2016 - March, 2019)
2. **Title:** Development of herbal aerosol formulation for mastitis  
**Scheme:** Biotech Innovation Ignition School (BIIS)-2  
**Grant:** Rs. 100000/-  
**Funding agency:** SRISTI (Society for Research and Initiatives for Sustainable Technologies and Institutions) in collaboration with BIRAC (Biotechnology Industry Research Assistance Council, Department of Biotechnology, Govt. of India)  
**Period:** 1 Year (Jan, 2019 - March, 2020)
3. **Title:** Training on production of soy based products for the Self-empowerment and Generation of Income to Rural Women  
**Scheme:** Dissemination of Innovative Technology  
**Grant:** Rs. 50000/-  
**Funding agency:** Tamil Nadu State Council for Science and Technology (TNSCST)  
**Period:** 5 Days
4. **Title:** Evaluation of Antidiabetic and Hypolipidemic effects of functional food components  
**Scheme:** Industry Consultancy Project  
**Grant:** Rs. 50000/-  
**Funding agency:** Thennagam, Chennai  
**Period:** 1 year
5. **Title:** Optimization of cultivation techniques for commercial production of *Flammulina velutipes* (Enoki Mushroom)  
**Scheme:** Seed Money Project

## Fellowships and Awards

- Postdoctoral Research Fellowship, Chiang Mai University, Thailand
- Postdoctoral Research Fellowship, Universiti Putra Malaysia, Malaysia
- Senior Research Fellowship, Council of Scientific and Industrial Research (CSIR), Government of India, India
- Senior Research Fellowship, Indian Council of Medical Research (ICMR), Government of India, India
- Best Poster Award, Association of Microbiologists of India, India
- Best Oral presentation Award, Association of Microbiologists of India, India

## Technical Competence

### Microbiological techniques

Isolation and identification, Mutation & strain improvement strategies

### Analytical techniques

Biochemical analysis of food components, Enzyme assays, Protein purification, Electrophoresis and Western blotting, Chromatographic methods - TLC, HPTLC, Column chromatography, HPLC and GC, UV-Spectrophotometric analysis

### Molecular techniques

Isolation of DNA & RNA, RAPD analysis

### Fermentation techniques

Solid state & Submerged fermentation, scale-up & down stream processing

## Subjects Handled

- Microbiology
- Cell Biology
- Industrial Biotechnology
- Food Biotechnology
- Bioinstrumentation
- Clinical Trials
- Biosafety, Bioethics & IPR

## Administrative Accomplishments

- Chief Superintendent of Examinations
- UGC Criterion VII coordinator
- NAAC Criterion III coordinator
- Department Research Coordinator
- Departmental Library In-charge
- Board of Studies member
- Class in-charge, Mentor

- Grant:** Rs. 35000/-  
**Funding agency:** Periyar Maniammai Institute of Science & Technology  
**Period:** 1 year
6. **Title:** Entrepreneurship Awareness Camp (EAC)  
**Scheme:** Department of Science and Technology-National Implementing and Monitoring Agency for Training (DST-NIMAT)  
**Grant:** Rs. 20000/-  
**Funding agency:** National Science & Technology Entrepreneurship Development Board (NSTEDB), Department of Science and Technology, Government of India, New Delhi  
**Period:** 3 days
7. **Title:** Development of silver nanoparticle based burn wound healing cream and its anti- bacterial evaluation  
**Scheme:** Student's Research Project  
**Grant:** Rs. 10000/-  
**Funding agency:** Tamil Nadu State Council for Science and Technology (TNSCST)  
**Period:** 6 Months (Nov, 2017 – April, 2018)
8. **Title:** Formulation and characterization of *Andrographis paniculata* based first aid cream  
**Scheme:** Student's Research Project  
**Grant:** Rs. 10000/-  
**Funding agency:** Tamil Nadu State Council for Science and Technology (TNSCST)  
**Period:** 6 Months (Nov, 2016 – April, 2017)
9. **Title:** Development of Herbal medicine for treatment of Bovine mastitis  
**Scheme:** Student's Research Project  
**Grant:** Rs. 7500/-  
**Funding agency:** Tamil Nadu State Council for Science and Technology (TNSCST)  
**Period:** 6 Months (Nov, 2019 – April, 2020)
10. **Title:** Production of food colors by *Monascus purpureus* using food waste  
**Scheme:** Student's Research Project  
**Grant:** Rs. 7500/-  
**Funding agency:** Tamil Nadu State Council for Science and Technology (TNSCST)  
**Period:** 6 Months (Nov, 2021 – April, 2022)

## Selected Conference Presentations

1. **Anbarasu K**, Ahila Mathimaran, Umesh-Kumar S and Vijayalakshmi G. 2016. Role of partially saturated canthaxanthin and ergosterol in the survival of *Aspergillus carbonarius* mutant at extreme acidic condition – presented as an oral presentation at the Association of Microbiologists of India, Guwahati, Assam.
2. **Anbarasu K**, Lai Wee Ting, Tan Poh Ling and Lai Oi Ming. 2015. Red Palm Olein Nanogel – A Novel Cosmeceutical for Topical Applications – presented as a poster in "Asian Congress on Biotechnology 2015", Kuala Lumpur, Malaysia.
3. **Anbarasu K**, Akshatha HS, Anandharamakrishnan C, Umesh-Kumar S and Vijayalakshmi G. 2011. Microencapsulation of xanthophyll of *Aspergillus carbonarius* by spray drying – presented as a poster and **secured Best poster Award** at the Association of Microbiologists of India, Chandigarh.
4. **Anbarasu K**, Akshatha HS, Muthukumar SP, Umesh-Kumar S and Vijayalakshmi G. 2011. Safety assessment of partially saturated canthaxanthin extracted from *Aspergillus carbonarius* on female Wistar rats – 28 days repeated dose study, presented as a poster at the Biotechnology for Better Tomorrow, Aurangabad.
5. **Anbarasu K**, Akshatha HS, Umesh-Kumar S and Vijayalakshmi G. 2009. Isolation of quality DNA from *Aspergillus carbonarius* suitable for differential expression studies, presented as a poster at the Emerging Trends in Biotechnology, Varanasi.
6. **Anbarasu K**, Akshatha HS, Umesh-Kumar S and Vijayalakshmi G. 2009. Effect of inhibitors on pigment synthesis in *Aspergillus carbonarius*, presented as a poster at the Indian Convention of Food Scientists and Technologists, Bangalore.
7. **Anbarasu K**. 2008. Microbial Food Colours presented as an oral seminar and **secured First Prize** at Association of Microbiologists of India, CFTRI, Mysore.
8. **Anbarasu K**. 2007. Soybean Fermentation, presented as an oral seminar at Association of Microbiologists of India, CFTRI, Mysore.
9. **Anbarasu K** and Vijayalakshmi G. 2005. Natural preservation of protein rich Tofu suitable for rural population, presented as a poster at the Association of Microbiologists of India, Hyderabad.

## References

**Prof. Dr. G. Vijayalakshmi**,  
(PhD Supervisor)  
Senior Principal Scientist (Retd.),  
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Central Food Technological Research  
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