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Notice for the PhD Viva Voce Examination

Mr Anish Mathew Chacko, Registration Number: 2170253, PhD Scholar at the Department of Life Sciences, School of Sciences, CHRIST (Deemed to be University), will defend his PhD thesis at the public viva-voce examination on Thursday, 10 September 2026 at 11.00 am in Room No. 044, Ground Floor, R&D Block, CHRIST (Deemed to be University), Bengaluru - 560029, Karnataka, India.

Title of the Thesis	:	**Phytochemical and Antioxidant Profiling of Different Parts (Aril and Seed) of Nutmeg (*Myristica fragrans*) at Different Maturation Stages, and *In Silico* Evaluation of Drug Likeliness of Identified Phytocompounds against Human Papilloma Virus (HPV) Protein**
Discipline	:	**Biotechnology**
External Examiner - I	:	**Dr Amitava Mukherjee** Senior Professor Centre for Nanobiotechnology Vellore Institute of Technology Katpadi, Vellore - 632014 Tamil Nadu
External Examiner - II	:	**Dr Rita Kundu** Professor Department of Botany Ballygunge Science College, University of Calcutta Circular Road, Kolkata – 700019 West Bengal
Supervisor	:	**Dr Anish Nag** Associate Professor Department of Life Sciences School of Sciences CHRIST (Deemed to be University) Bengaluru - 560029 Karnataka

The members of the Research Advisory Committee of the Scholar, the faculty members of the Department and the School, interested experts and research scholars of all the branches of research are cordially invited to attend this open viva–voce examination.

Registrar (Academics)

Place: Bengaluru
Date: 28 August 2026

ABSTRACT

The current study is a detailed comprehensive analysis of Myristica fragrans Houtt., commonly called as nutmeg, across all stages of maturation of both seed and aril. The initial anatomical analysis using SEM-EDX helped to map the progressive changes in cellular structure. The spectroscopic analysis of pigment content in aril samples showed that both chlorophyll and carotenoid levels increased from juvenile to ripe stages. FTIR spectroscopy analysis confirmed the presence of several functional groups, such as alkanes, phenolics, esters, and amines.

The objective of the present study was also to optimize phenolic and antioxidant-rich extracts from seed and aril using response surface methodology. For the ripe seed extracts, TPC values ranged from 127.05 to 412.59 mg GAE/g DW, TFC ranged from 17.96 to 60.54 mg QUE/g DW, and DPPH antioxidant activity ranged from 466.01 to 953.05 mg AAE/g DW. Similarly, the ripe aril extracts exhibited slightly lower ranges, with TPC values between 110.34 and 371.33 mg GAE/g DW, TFC values between 12.49 and 49.95 mg QUE/g DW, and DPPH values between 419.21 and 817.54 mg AAE/g DW, respectively.

LC-MS and GC-MS analysis identified 14 and 23 molecules in the ripe aril and ripe seed respectively. 23 and 14 compounds in the ripe seed and ripe aril respectively. Among 13 selected compounds, Myristicin showed the strongest binding to the HPV E6 protein. ADME analysis showed that myristicin fits drug-likeness standards, with no Lipinski's rule violations, high absorption in the gut, and the ability to cross the blood–brain barrier.

Keywords: *Myristica fragrans, Nutmeg maturation, Phytochemical profiling*

Publications:

1. **Chacko, A. M.**, & Nag, A. (2025). Multivariate statistical optimization of phenolics and antioxidants from nutmeg seeds (Myristica fragrans Houtt). Journal of Food Measurement and Characterization, 19(2), 1154-1166. https://doi.org/10.1007/s11694-024-03031-6
2. **Chacko, A. M.**, & Nag, A. (2024). Evaluation of morpho-cellular and spectroscopic characteristics of Myristica fragrans Houtt mace across three different maturation stages (juvenile, raw and ripe). Research Journal of Chemistry and Environment, 28(1), 8-15. https://doi.org/10.25303/2812rjce08015
3. **Chacko, A. M.**, Bylappa, Y., & Nag, A. (2025). Bioinformatics applications for evaluating health and pharmacological properties of tea: Use of computer-assisted drug discovery tools. In Tea in Health and Disease Prevention (pp. 379-390). (Book chapter, ISBN: 978-0-443-14158-4)