

Exploring tender coconut water as a viable medium for fungal growth: A comparative study with Potato Dextrose Agar

S Shayanthavi¹, R Kapilan², I Wickramasinghe¹

Introduction and Objectives: Tender coconut water (TCW) is a nutrient-rich and readily available resource in tropical regions, offering an alternative to traditional fungal growth media such as Potato Dextrose Agar (PDA). The current study explores the viability of TCW as a fungal growth medium by comparing the growth of various fungi in TCW of different concentrations and PDA.

Methods: Tender coconut water aged 5-7 months was collected from local coconut farms in Jaffna. The TCW was filtered through Whatman filter paper and TCW-agar media was prepared by incorporating 1.5% agar into the fresh TCW. The media was then autoclaved for sterilisation. The fungi evaluated in this study included one species each of *Fusarium*, *Penicillium*, *Aspergillus*, and *Mucor*. These fungal isolates were obtained from the Department of Botany, University of Jaffna. Fungi were incubated at room temperature for 6 days and fungal growth was assessed through colony diameter and fungal dry weight measurements.

Results: The results indicated that 100% TCW concentration yielded significantly higher colony diameters for *Fusarium* (7.48 cm), *Mucor* (8.45 cm), *Aspergillus* (8.17 cm), and *Penicillium* (3.58 cm) compared to PDA, which showed colony diameters of 6.15 cm, 5.05 cm, 7.25 cm, and 2.65 cm, respectively. In terms of dry weight, 100% TCW concentrations were 80.90 mg for *Fusarium*, 162.93 mg for *Mucor*, 143.10 mg for *Aspergillus*, and 72.90 mg for *Penicillium*. Comparatively, PDA yielded higher dry weights of 201.50 mg, 346.90 mg, 460.73 mg, and 97.90 mg for *Fusarium*, *Mucor*, *Aspergillus*, *Penicillium*, respectively. These findings demonstrate that full-strength TCW supports greater fungal colony diameters than PDA, suggesting superior surface growth. However, PDA outperformed TCW in terms of fungal biomass production, as indicated by higher dry weight measurements.

Conclusions: This study finds that TCW-agar promotes significant fungal colony growth, while PDA is better for biomass production. However, limitations include the absence of pathogenic fungi like *Candida* spp. and dermatophytes, and lack of colony morphology and microscopic comparisons essential for fungal identification. Further optimisation and validation are required before it can be considered a full alternative to PDA.

Keywords: Colony diameter, dry weight, fungal growth media, tender coconut water

¹Department of Food Science and Technology, Faculty of Applied Sciences, University of Sri Jayewardenepura, Nugegoda, Sri Lanka.

²Department of Botany, Faculty of Science, University of Jaffna, Jaffna, Sri Lanka

Address for correspondence: Ms. Shayanthavi Sathasivamoorthy, Department of Food Science and Technology, Faculty of Applied Sciences, University of Sri Jayewardenepura, Nugegoda, Sri Lanka.; Telephone:

+94773377363; Email: shayanthavi@sci.sjp.ac.lk  <https://orcid.org/0000-0003-1124-7271>