SEKOLAH PASCASARJANA
UNIVERSITAS GADJAH MADA
Jl. Teknika Utara, Pogung, Yogyakarta, 55281
Telp. (0274) 564239
e-mail: teknosains@ugm.ac.id
website: https://jurnal.ugm.ac.id/teknosains

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Editorial Office of Jurnal Teknosains
The Graduate School of Universitas Gadjah Mada
Jalan Teknika Utara, Pogung Yogyakarta
Tel. 0274-564239 ext (207), Fax. 0274-564239
Email: teknosains@ugm.ac.id
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JURNAL TEKNOSAINS

CONTENTS

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Vol. 16, No. 1, i-iii, December 2025
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JURNAL TEKNOSAINS

EDITORIAL

Greetings to the Readers of Jurnal Teknosains!

We are delighted to present the December edition of our journal (Volume 16, Number 1, December 2025), which showcases a rich collection of interdisciplinary research in biomedical engineering, environmental technology, renewable energy, materials science, and applied biological sciences. The studies featured in this issue reflect the dynamic landscape of technoscientific inquiry, highlighting both fundamental advancements and practical solutions to contemporary challenges.

We open this edition with an in silico exploration of boswellic acid as a potential antibacterial agent against Cutibacterium acnes and other acne–associated pathogens. Through molecular docking targeting nine key bacterial proteins, the study demonstrates that boswellic acid exhibits strong binding affinity, particularly to the transcriptional regulator TcaR, suggesting its promise as a topical antibacterial candidate. This work underscores how computational biomedicine continues to accelerate the discovery of safer and more effective dermatological agents.

Our second paper examines the behavior of palm oil droplets during combustion when enhanced with eucalyptus–oil bioadditives and magnetic pull fields. Using direct combustion testing, the authors show that the combined bioadditive and magnetic approach significantly improves flame evolution time, increases peak temperature, and reduces hydrocarbon gas formation. These findings provide valuable insights for optimizing the use of vegetable oils as alternative fuels.

Environmental concerns are addressed in our third article, which evaluates the integration of Moving Bed Biofilm Reactor (MBBR) and Lamella Clarifier units for treating hospital wastewater. Experimental data reveal noteworthy reductions in COD, BOD, and TSS, with effluent pH remaining stable and compliant with regulatory standards. The system's effectiveness and statistical significance highlight its potential as a reliable and scalable wastewater treatment solution.

In the field of renewable energy materials, our fourth article presents a numerical investigation of perovskite solar cell (PSC) architectures using the OGMANANO simulation platform. By analyzing the influence of layer thickness on photovoltaic parameters, the authors identify optimal absorber, ETL, and HTL configurations capable of achieving a power conversion efficiency of 22.7%. This study affirms the critical role of precision engineering in advancing next–generation solar technologies.

Our fifth contribution employs Finite Element Analysis (FEA) to examine the biomechanical behavior of resin composite restorations enhanced with chitosan. The results indicate that cavity geometry plays a dominant role in stress and strain distribution, while chitosan addition has secondary effects. The study offers valuable guidance for designing durable restorative materials that respond appropriately to mechanical loading in the oral environment.

From the domain of food technology, the sixth article investigates garlic extract as a natural preservative for red snapper. SDS-PAGE analysis reveals that immersion in 5% garlic extract yields

the most stable protein profile, closely resembling that of fresh fish. This supports the potential of garlic–based treatments as safe and effective preservation techniques.

Our seventh paper explores the antioxidant properties of Dillenia suffruticosa leaves by comparing maceration and Microwave-Assisted Extraction (MAE) methods. The MAE approach demonstrates significantly stronger antioxidant activity, reinforcing its suitability for extracting thermolabile bioactive compounds efficiently.

To close this edition, we present a study on Constructed Wetlands (CW) using roof–tile fragments and Echinodorus palaefolius for treating phosphate–rich laundry wastewater. Remarkably, the system achieved a 99.96% reduction in phosphate levels, driven by adsorption, biodegradation, and microbial interactions—particularly from Proteus and Citrobacter species.

Together, the articles in this issue reflect the dedication of researchers in advancing science and engineering for societal benefit. As we close this final issue of the year, we would also like to extend our warmest wishes to all our readers, authors, and reviewers. May this holiday season bring rest, reflection, and joyful moments with your loved ones. We look forward to welcoming you again in our June 2026 edition with new research contributions and advancements across the technoscience fields.

Warm regards,
Editor in Chief
Jurnal Teknosains

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