

# EFFICACY OF CITRUS PEEL (*Citrus sinensis* (L.) OSBECK.) AS A PRESERVATIVE AGAINST TERMITE ATTACK ON *Holarrhena floribunda* (G.DON) T. DURAND & SCHINZ. WOOD.

Adewunmi Omobolaji Adenaiya, Sadiq Olateju Islamiat  
Department of Forest Production and Products, University of Ibadan, Nigeria

## Introduction: Harnessing Nature's Shield for Wood Preservation

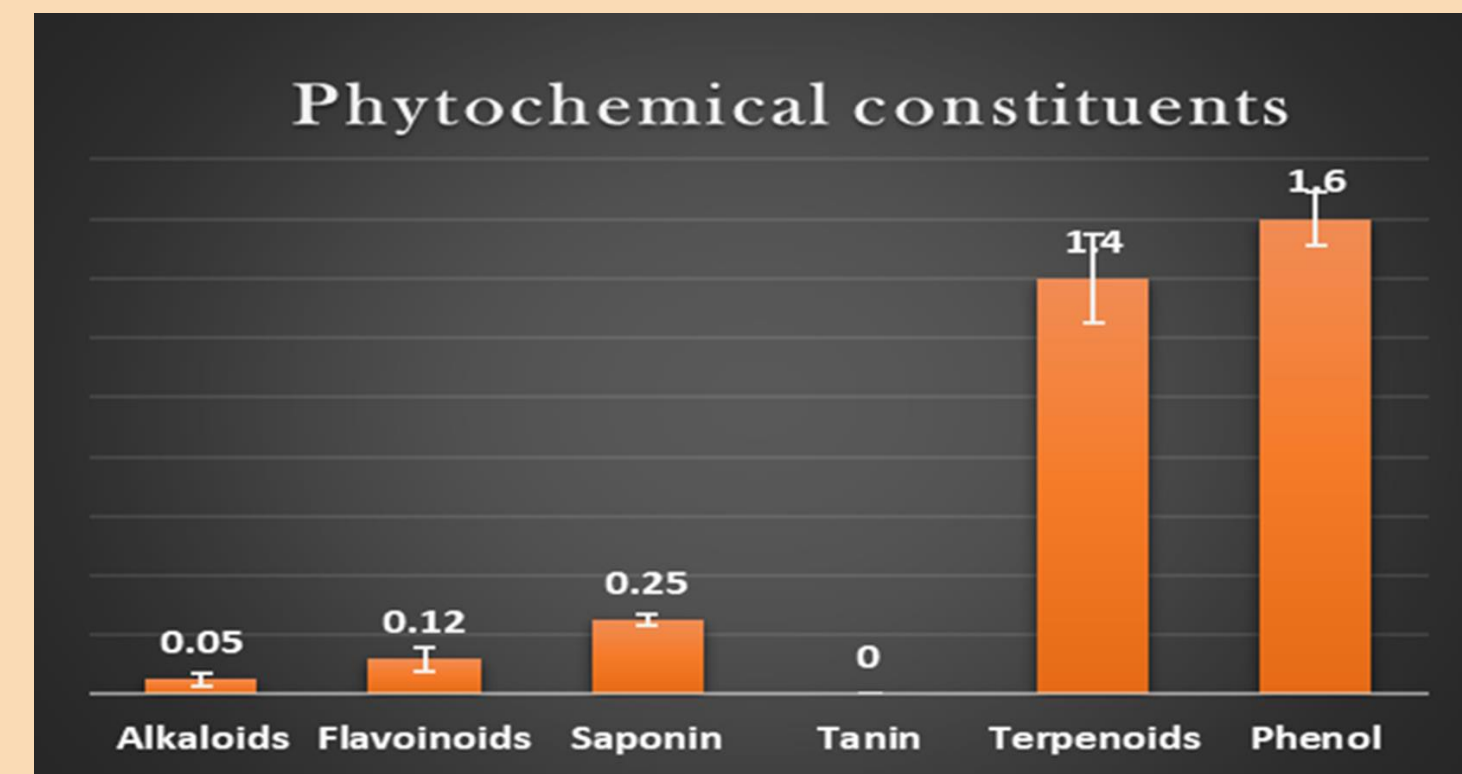
Wood is a versatile and sustainable material known for its strength, durability, and aesthetic appeal, yet it is susceptible to damage from pests, moisture, sunlight, and decay. Globalization and climate change influence the decay of wood products, emphasizing the need for preservation techniques<sup>1</sup>. Traditional synthetic preservatives used in wood preservation pose environmental concerns and impact non-target species<sup>2</sup>. Natural preservatives, like plant-based oils, offer an eco-friendly alternative for wood preservation<sup>3</sup>. *Citrus sinensis* peel oil, rich in antimicrobial and antioxidant compounds, shows potential for protecting wood against decay, fungal growth, and insects addressing the demand for environmentally friendly preservation methods in the face of increasing environmental concerns.

## From Extraction to treatment: Methodical Approach

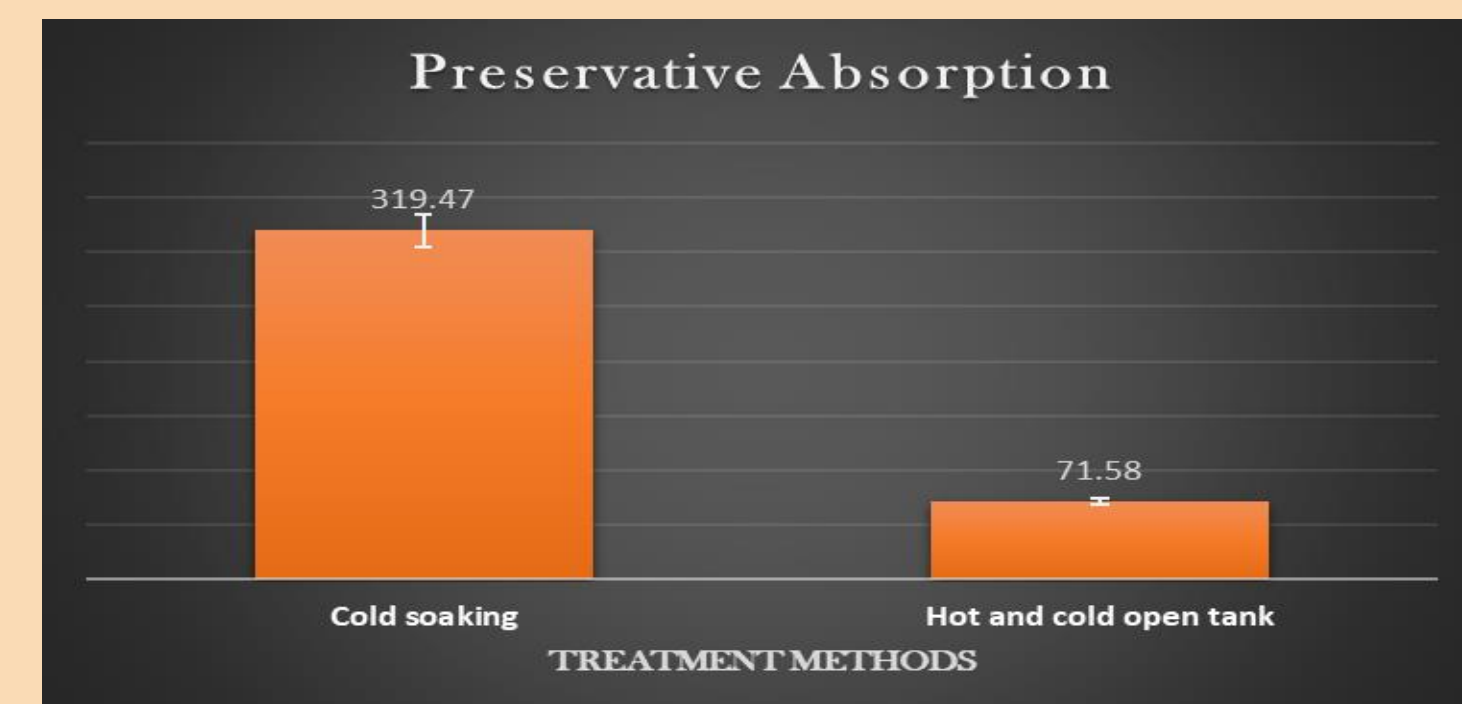
Wood and *Citrus sinensis* peel samples were sourced from Oyo state, Nigeria and subjected to mechanical processing and tests. In the extraction of oil, air-drying and mechanical extraction methods were used. The phytochemical evaluation of the extracted oil showed that the oil contained several active ingredients which were flavonoids, alkaloids, saponins, phenols and terpenoids. Cold soaking and hot and cold open tank treatment methods were used to determine the amount of oil absorbed in the processed wood samples after treatment with the extracted oil. A durability test which entailed exposing treated and untreated wood samples to termites for termite resistance test in accordance to ASTM procedures by determining the weight loss in the samples after 12 weeks was carried out<sup>4</sup>.

## Results

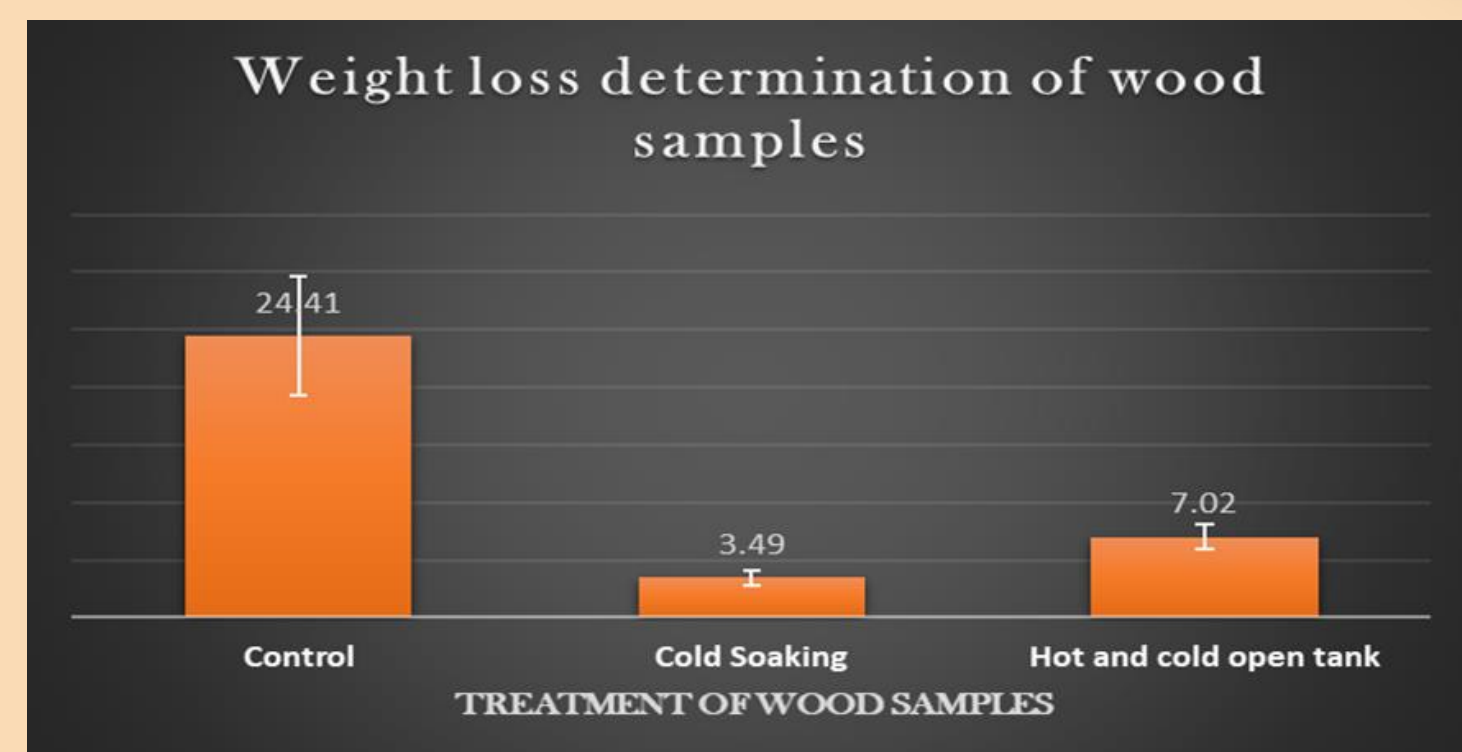
1.



2.



3.



The Yield obtained from *Citrus sinensis* peel oil in 5 extraction counts was 1.41%  
**Fig1:** Phytochemical screening of the oil sample showing mean of bioactive compounds present in oil sample.  
**Fig2:** Preservative absorption of wood significantly varying in the Different treatment methods.  
**Fig3:** Different wood treatments resulted in varying weight loss percentages: control group; 24.41±5.18%, cold soaking ; 3.49±0.64%, hot and cold open tank ;7.02±1.1 indicating varied preservation effectiveness.

## Conclusion

The mechanically extracted peel oil of *Citrus sinensis* gave a percentage yield of 1.41%. Other methods of extraction give varying influences on oil production. The phytochemical analysis places emphasis on the antimicrobial qualities of the oil, which is key in long-lasting wood preservation. The cold soaking treatment demonstrated greater preservative absorption and lower weight loss indicating the process to be feasible in terms of preservation. In general, wood preserved with *Citrus sinensis* peel oil should give rise to very promising potential against termite infestation, with its use expected to increase the durability and resistance.

## Acknowledgement

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## References

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