

RESEARCH ARTICLE



Comparison of the antifungal activities of selected botanical extracts against the *Carica papaya* fruit rot pathogen (*Cladosporium herbarum*)

Tunde Sheriffdeen Bello , Matthew Omoniyi Adebola and Chimobi Samuel Chikwendu

School of Life Sciences, Department of Plant Biology, Federal University of Technology Minna, Minna, Niger State, Nigeria

ABSTRACT

This study sought to utilize plant extracts to reduce rot in *Carica papaya* fruit caused by *Cladosporium herbarum*. Separate studies on the isolation and reemergence of the fungus were conducted. The phytochemical qualities of *Anacardium occidentale*, *Prunus dulcis* and *Gmelina arborea* leaf samples were assessed, and the potential antifungal properties of the extracts were investigated using disc diffusion test. The pathogenicity of the fungus was confirmed, as was the presence of some phytochemicals in the extracts. Overall, the results are consistent; inhibition of hyphal extension was significantly influenced ($p < 0.05$) by interactions of various concentrations and experimental days. The inhibition was concentration-dependent, the highest zone of inhibition was observed at 150 mg mL^{-1} in all extracts. *A. occidentale* demonstrated the highest inhibition (87.5%), but 38.3% in *G. arborea* on the seventh day. Inhibitory activities of these botanicals enlist them as effective antifungal agents for the treatment of rot disease.

ARTICLE HISTORY

Received 17 January 2022
Revised 27 March 2022
Accepted 18 July 2022

KEYWORDS

Cladosporium herbarum;
phytopathogenic;
antifungal;
postharvest disease;
disease management

1. Introduction

Papaya (*Carica papaya*) fruit is the most economically significant fruit in the Caricaceae family grown primarily for its fruits (Chávez-Pesqueira and Núñez-Farfán 2017). The fruit is high in nutrients and has been used in the production of snacks (Ibrahim et al. 2021) and wines (Bankefa et al. 2021). Pawpaw has pharmacological and medicinal importance because it is used in the treatment of stomach disorders, diarrhoea