

Synergistic antifungal activity of Limonoids isolated from Sky fruit (*swietenia macrophylla king*) and Limeberry (*triphasia trifolia (burm. F.) P. Wilson*) seeds against selected fungal pathogens

Duhashiney Veera Sundaran, Erwin Martinez Faller, Mohamed Rasny Mohamed Razik.
School of Pharmacy, Management & Science University

Abstract

Antimicrobial resistance (AMR) is a prolonged global issue recognized by World Health Organization (WHO) which is projecting into global healthcare impacts and becoming global economic burden. In response, demand for newer antimicrobial agents became overwhelming focusing especially on the plant-based research due to rich source of phytochemicals. Limonoids are active phytochemical found in *Swietenia macrophylla King* (Sky fruit) and *Triphasia Trifolia* (Limeberry) originating from *Meliaceae* and *Rutaceae* family, respectively. The research objective of the study is to evaluate the synergistic antifungal assay of the isolated fraction of limonoids from sky fruit and limeberry seeds against *Candida albican* and *Aspergillus fumigatus*. The preliminary sensitivity tests were carried out using macrodilution minimum inhibitory concentration (MIC) test and Kirby-Bauer disk diffusion test. The synergistic test was performed using modified double-disk synergy test (MDDST) in which it has been modified to substitute the antimicrobial agents with phytochemicals. The findings showed an MIC of 31.25mg/mL and 7.81mg/mL for *Swietenia macrophylla King* and *Triphasia Trifolia* respectively for the selected fungal pathogens. Preliminary assay indicates minimum antifungal efficacy of both extracts against *Candida albicans* (>11mm;9mm) and *Aspergillus fumigatus* (>29mm:25mm) compare with Caspofungin (>13mm and 30mm) as positive control. The synergistic antifungal test showed a promising equipotency on *Candida albicans* (4:1;16mm) compare with *Aspergillus fumigates* (1:4;23mm) based on the concentration and zone of inhibition. Thus, sky fruit and limeberry seeds showed significant equipotency with the current marketed antifungal agent.

Keywords: *Swietenia macrophylla King, Candida Albican, Aspergillus Fumigatus, Triphasia Trifolia, Modified Double-Disk Synergy Test*