

Phytochemical analysis and *in vitro* antifungal evaluation of *Jatropha curcas* against Late Leaf Spot disease on groundnut

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1 ABSTRACT

This study was done to evaluate the antifungal efficacy of *Jatropha curcas* leaf extracts against groundnut late leaf spot disease caused by *Phaeosariopsis personata* (*P. personata*) and identify their bioactive compounds responsible for antifungal effects. *Jatropha curcas* leaves extracted sequentially through chloroform, ethyl acetate and methanol solvents were evaluated against the mycelial growth of *P. personata* by food poisoning method. About 0.1, 0.25 or 0.5 mg/ml (plant extract/water) of each extract were mixed in molten PDA poured into Petri dishes. Thereafter solidified amended PDA with extracts was kept at room temperature for 24 hours. A seven-day-old fungal plug (4mm diameter) of *P. personata* was plated at the middle of the Petri dishes in triplicates. Inoculation on PDA plates amended with fungicide Chlorothalonil (720g/L) or water was included as positive and negative control respectively. The results proved that *J. curcas* leaf extracts possessed fungicidal properties since they inhibited the growth of *P. personata*. Moreover the antifungal effect of *J. curcas* leaf extracts increased as concentration increased. Moreover, *J. curcas* leaf extracts highly inhibited mycelial growth by (85.78%) similar to standard fungicide (chlorothalonil) (88.37%) in this experiment. The presence of important compounds found in *J. curcas* leaf extracts by GC-MS supported their ability against *P. personata* pathogen. Among the major compounds identified with antifungal activity were hexadecanoic acid methyl ester, hexadecanoic acid ethyl ester, hexadecane, n-hexadecanoic acid, octadecanoic acid ethyl ester, phytol and 9, 12-octadecadienoic acid (Z,Z)-methyl ester. The potentiality of *J. curcas* extracts in managing groundnut late leaf spot disease was confirmed by their ability to inhibit the growth of *P. personata* and possession of important phytochemical compounds.