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In vitro Control of Mycosphaerella arachidis Deighton the Early Leaf Spot Disease Pathogen of Groundnut by the Extracts from Six Medicinal Plants

Authors : Matthew Omoniyi Adebola, Jude E Amadi

Abstract : Ground nut (Arachis hypogaea) is one of the most popular commercial crops in Nigeria. Its suc-cessful production has been drastically affected by early leaf spot disease caused by Mycosphae-rella arachidis Deighton. In vitro control of the pathogen by six medicinal plants (Entada afri-cana, Vitex doniana, Lawsonia inermis, Azadirachta indica, Acalypha hispida and Nuaclea lati-folia) was assessed in this study. The extracts of the plants were prepared using cold and hot wa-ter and alcohol. The pathogen was isolated from ground nut infected with early leaf spot disease. The results revealed a great significant difference ($P<0.05$) in yield of extracts between cold water, hot water, and alcohol extracts. A significant difference ($P<0.05$) was observed in percentage concentrations of the various phytochemical constituents present in the extracts. Flavonoids per-centage concentration was the highest (0.68 - 1.95%) followed by saponnin(0.09-1.53%) in N. latifolia extracts. Steroiods had the least percentage concentrations (0.00- 0.09%)followed by terpenoids(0.02–0.71%) and proanthocyannin (0.05 – 0.86%). N. latifolia extracts produced the highest percentage concentrations (0.07–1.95%) of all the phytochemicals followed by A. indi-ca(0.05–1.64%)and least concentrations were obtained in A. hispidia(0.09 – 0.87%)and V. do-niana (0.00–0.88%). The extracts inhibited spore germination and growth of M. arachidis. The inhibition by alcohol extracts was high and significantly different ($P>0.05$) from cold and hot water extracts. Alcohol extract of L. inermis gave 100% spore germination inhibition followed by N. latifolia and A.indica with 97.75% and 85.60% inhibition respectively. Therefore, field trials of these six medicinal plants on the control of early leaf spot disease of ground nut are rec-ommended.

Keywords : groundnut, phytochemicals, medicinal plants, extracts, inhibition
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