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The *in vitro* efficacy on rifampicin-resistant tuberculosis of extracts from medicinal plants used by traditional medicine practitioners to treat tuberculosis in Uganda

Kirimuhuzya Claude[1], **Bunalema Lydia**[1], **Tabuti John R S**[1], **Kakudidi K Esezah**[1], **Orodho John**[2], **Magadula Jangu Joseph**[3], **Otieno Nicholas**[3] and **Paul Okemo**[2]
[1]Makerere University, Uganda
[2]Kenyatta University, Kenya
[3]Muhimbili University, Tanzania

Background: Tuberculosis is one of the dreadful infectious diseases and the leading cause of mortality worldwide. Outbreaks of multi-drug resistant and extensively drug-resistant tuberculosis have also compounded the problem. Recent reports have mentioned the existence of even a more dreadful strain of totally drug-resistant tuberculosis. New drugs have to be developed to deal with the resistant strains, which have already become a problem especially where there is co-infection with HIV/AIDS. The objective of the study was to identify the medicinal plants used by Traditional Medicine Practitioners (TMPS), and screen them against rifampicin-resistant *Mycobacterium tuberculosis*, identify the active ingredients and possibly develop a product that could be used to deal with the threat by the multidrug and extensively drug resistant strains of *M. tuberculosis*.

Methods: The study was preceded by a survey to establish the medicinal plants used by traditional medicine practitioners. Some of the most frequently mentioned plant species were collected from various areas, their crude petroleum ether, chloroform and methanol extracts prepared and tested in a bioassay on three strains of *Mycobacterium*. Phytochemical screening and acute toxicity tests were also done for the most active extracts. The isolation, characterization and chronic toxicity testing for active compounds is still ongoing for some selected medicinal plants among the most active plant species screened.

Results: Six of the screened medicinal plants were found active against *M. tuberculosis*, three of which were active on rifampicin-resistant tuberculosis. The highest activity was registered with *Lantana camara, Erythrina abyssinica, Cryptolepis sanguinolenta, Warburgia ugandensis, Mangifera indica* with zones of inhibition ranging between 10.7 and 23 mm and MICs ranging between 1.17 and 6.25 mg/ml. For rifampicin and isoniazid they were between 0.25 and 9.38 µg/ml. The MBCs for the active crude extracts were between 0.20 and 6.25 mg/ml while for rifampicin and isoniazid they were between 0.25 and 1.0 µg/ml. Acute toxicity tests on *E. abyssinica* and *C. sanguinolenta* gave LD_{50} between 700 and 800 mg/kg body weight which were in the relatively safe range.

Conclusion: The bioassays conducted on the selected plant species vindicated some of the claims by the Traditional Medicine Practitioners by showing activity against rifampicin-resistant *M. tuberculosis* and this raises the hope of developing a product that is active against MDR and possibly XDR tuberculosis.

claude.kirimuhuzya@kiu.ac.ug