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In vitro anti-mycobacterial activity of selected medicinal plants against *Mycobacterium tuberculosis* and *Mycobacterium bovis* strains

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Background: Tuberculosis is a global burden with one–third of the world's population infected with the pathogen *Mycobacterium tuberculosis* complex and an annual 1.4 million deaths from the disease. This high incidence of infection and the increased rate of multi-drug resistant and extensively-drug resistant strains of the organism further complicated the problem of TB control and have called for an urgent need to develop new anti-TB drugs from plants. In this study, the *in vitro* activity of root of *Calpurnia aurea*, seeds of *Ocimum basilicum*, leaves of *Artemisia abyssinica*, *Croton macrostachyus*, and *Eucalyptus camaldulensis* were evaluated against *M. tuberculosis* and *M. bovis* strains.

Methods: Five Ethiopian medicinal plants, root of *Calpurnia aurea*, seeds of *Ocimum basilicum*, leaves of *Artemisia abyssinica*, *Croton macrostachyus*, and *Eucalyptus camaldulensis* used locally for the management of tuberculosis (TB) were investigated for *in vitro* antimycobacterial activity against *M. tuberculosis* and *M. bovis* strains. 80% methanolic extracts of the plant materials were obtained by maceration. The antimycobacterial activity was determined using 96 wells of microplate with the help of visual resazurin microtiter assay.

Results: The crude 80% methanolic extracts of the root of *C. aurea*, seeds of *O. basilicum*, and leaves of *A. abyssinica*, *C. macrostachyus,* and *E. camaldulensis* had anti-mycobacterial activity with minimum inhibitory concentration (MIC) ranging from 6.25–100 µg/ml. The MIC of 80% methanol extracts in the order mentioned above ranged 25-100 µg/ml and 12.5-75 µg/ml, 25-100 µg/ml and 25-50 µg/ml, 6.25-50 µg/ml and 12.5-50 µg/ml, 12.5-100 µg/ml and 18.25-50 µg/ml and 6.25-50 µg/ml and 12.5-50 µg/ml, respectively for *M. tuberculosis* and *M. bovis strains.*

Conclusions: The results support the local use of these plants in the treatment of TB and it is suggested that these plants may be of therapeutic value in the treatment of TB. However, further investigations on isolating chemical constituents responsible for eliciting the observed activity in these plants are needed.

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