Abstract

Introduction. Human tuberculosis is a contagious-infectious disease mainly caused by Mycobacterium tuberculosis. Although regimens exist for treating tuberculosis, they are far from ideal. Development of effective strategies for treatment of human tuberculosis has posed a challenge, considering the increase in infections associated with the human immunodeficiency virus and immunocompromised patients. Essential oils -volatile, aromatic oil extracts from plants-have been used in traditional treatment of many diseases; however careful investigation of these oils has not been undertaken with respect to treatments of tuberculosis.

Objective. The in vitro antitubercular activity of essential oils from 11 medicinal plants grown in Colombia were assessed for efficacy as new medications (phytomedicines) for treatment of M. tuberculosis H37Rv.

Material and methods. Essential oil extraction and analysis were performed as describedStashenko et al. (2004). Minimal inhibitory concentrations were determined by a colorimetric macrodilution method, following the protocol described by Abate et al. (1998). Isoniazide and rifampin were used as control treatments. Bactericidal and bacteriostatic activity was measured using the method developed by the Clinical and Laboratory Standards Institute consigned in the M26-A protocol.

Results. Essential oils from Achyrocline alata and Swinglea glutinosa were the most active with minimal inhibitory concentrations of 62.5±0.1 and 100±36 ug ml-1, respectively. Carvacrol, thymol, p-cymene, 1,8-cineole, limonene, and B-pinene were the major components, most often identified in the 11 plant extracts of essential oils. Time-kill curve assays demonstrated the bacteriostatic activity of these essential oils. Conclusions. The essential oils from A. alata and S. glutinosa plants, and the components identified therein, are candidates as potential phytotherapeutic agents for human tuberculosis control.

Keywords
Mycobacterium tuberculosis, tuberculosis, anti-infective agents, plants, medicinal, phytotherapy, Colombia.