Abstract

Title: Antibacterial activity of *Datura stramonium* against standard and clinical isolate pathogenic microorganisms

Datura stramonium more commonly known as Jimson weed or thorn apple is a wide growing flowering plant which has been employed by the local community to treat several ailments in Ethiopia. The purpose of the present work was to assess the antibacterial activity of ethanol, methanol, acetone, chloroform and water extracts of *Datura stramonium* leaf extracts using broth dilution and agar well diffusion methods against human pathogenic bacteria. Chloroform extracts showed the highest zone of inhibition against most of the tested bacterial strains at the concentration of 50 mg/ml. Water extracts are not able to show any zone of inhibition against all tested bacterial strains as compared to other four solvents used for extraction. Minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) were determined by standard methods. The MIC and MBC results range from 6.25 to 12.5 mg/ml. The present work shows that *D. stramonium* has maximum antibacterial activity against *Staphylococcus aureus* (ATCC 25923; 18.2±2.1 mm) in the chloroform extract, while the minimum antibacterial activity was recorded against *Escherichia coli* clinical isolate (8.2±1.8 mm) (acetone extract). Chloroform extracts showed the highest zone of inhibition against most of the pathogenic bacterial strains tested as compared to the other solvents used for the extraction. In this study, *D. stramonium* leaf extracts showed considerable antibacterial activity that sustains the local residential area which uses this plant to treat bacterial and fungal infections, hence leading to the conclusion that, this plant would serve as sources of antimicrobial agents to obtain the best treatment alternatives for the infective disease. Further investigation of this potential antibacterial agent is required, especially using chloroform as an extraction solvent to precisely demonstrate the antimicrobial effects of the plant.

Key words: Antibacterial activity, *Datura stramonium*, minimum bactericidal concentration (MBC), minimum inhibitory concentration (MIC), zone of inhibition.