

ABSTRACT

Disease is the most dangerous man's enemy in this age. This has worsened with the enormous development of drug resistance witnessed in many parts of the world. This study aimed at determining the antimicrobial properties of Aloe vera, Aloe volkensii and Aloe secundiflora crude extracts. The plants samples were collected from the Department of Biological Sciences, Egerton University. The plants gel was separately extracted by crushing with a pestle and a mortar. The outer green rids and the pulps were separately dried at 50o C in a hot air oven followed by crushing using pestle and mortar. The extraction of the metabolites was carried out using methanol. The phytochemical screening of the crude extracts was carried out to determine the secondary metabolites present in the crude extracts. The antimicrobial tests were carried out using Mueller Hinton agar for bacteria and potato dextrose agar for fungi using agar well diffusion technique. The minimum inhibitory concentration was determined using two fold dilution assay followed by determination of microbicidal and microbistatic properties of the extracts. The samples presented varying levels of saponins, glucosides, flavonoids, tannins, proteins and alkaloids. The extracts form Aloe vera, Aloe volkensii and Aloe secundiflora inhibited growth of Staphylococcus aureus, Bacillus subtilis, Klebsiella pneumonia, Escherichia coli, Erwinia carotovora, Candida albicans and Fusarium oxysporum. The zones of inhibition varied significantly ($F = 3.424051$, $P = 0.005007$) between the extracts of Aloe vera, Aloe volkensii and Aloe secundiflora. The minimum inhibitory concentration, minimum bactericidal concentration and minimum fungicidal concentration of the extracts varied significantly ($F = 4.696456$, $P = 0.000534$). The three varieties of Aloe spp. namely Aloe vera, Aloe volkensii and Aloe secundiflora were collected from the Department of Biological Sciences, Egerton University. Different crude extracts from them were obtained having varying secondary metabolites. The antimicrobial properties of the crude extracts were tested against Staphylococcus aureus, Bacillus subtilis, Klebsiella pneumoniae, Escherichia coli, Candida albicans and Fusarium oxysporum.

Keywords: Aloe vera; Aloe secundiflora; Aloe volkensii; Antimicrobial; Egerton; MIC; MBC; MFC