

In Vitro Study on the Antimicrobial Activity of Ass Hay (Donkey Skin) On Some Pathogenic Microorganisms

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Abstract : This study was designed to determine the antimicrobial activities and minimum inhibitory concentration of three different batches (Fresh, Oven dried and Sundried) of Ass Hay extracted with water, ethanol and methanol against selected human pathogenic microorganisms (Escherichia coli, Klebsiella Pneumonia, Staphylococcus aureus, Aspergillus niger and Candida albicans). All extracts were reconstituted with peptone water and tested for antimicrobial activity. The antimicrobial activity, the Minimum Inhibitory Concentration and Minimum Bactericidal/Fungicidal concentrations were determined by agar well diffusion method against test organisms in which aseptic conditions were observed. The antimicrobial activities of the different batches of Ass Hay on the test organisms varied considerably. The highest inhibition zone diameter at 200 mg/ml for the different batches of Ass Hay was recorded by sundried methanol extract against Escherichia coli at 36.4 ± 0.2 mm while fresh methanol extract inhibited Klebsiella pneumonia with the least inhibition zone diameter at 20.1 ± 0.1 mm. At 100 mg/ml the highest inhibition zone diameter was recorded by oven dried water extract against Escherichia coli at 30.3 ± 0.3 mm while sun dried water extract inhibited Staphylococcus aureus with the least inhibition zone diameter at 15.1 ± 0.1 mm. At 50mg/ml, the highest inhibition zone diameter was recorded by fresh water extract against Escherichia coli at 25.9 ± 0.1 mm while oven dried water extract inhibited Klebsiella pneumonia with least inhibition zone diameter at 12.1 ± 0.2 mm. At 25mg/ml, the highest inhibition zone diameter was recorded by fresh water extract against Escherichia coli at 18.3 ± 0.2 mm while sun dried ethanol extract inhibited Escherichia coli with least inhibition zone diameter at 10.1 ± 0.1 mm. The MIC and MBC result of ethanol extract of fresh Ass Hay showed a uniform value of 6.25 mg/ml and 12.5 mg/ml respectively for all test bacterial isolates. The Minimum Inhibitory concentration and Minimum bactericidal concentration results of Oven dried ethanol Ass Hay extract showed a uniform value of 3.125 mg/ml and 6.25 mg/ml respectively for all test bacterial isolates and Minimum fungicidal concentration value of 12.5 mg/ml for Aspergillus niger. Statistical analysis showed there is significant difference in mean zone inhibition diameter of the products at $p < 0.05$, $p = 0.019$. This study has shown there is antimicrobial potential in Ass Hay and at such there is need to further exploit Donkey Ass Hay in order to maximize the potential.

Keywords : microorganisms, Ass Hay, antimicrobial activity, extracts

Conference Title : ICWMB 2023 : International Conference on Water Microbiology and Biotechnology

Conference Location : London, United Kingdom

Conference Dates : December 11-12, 2023