World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:10, No:06, 2016

Antimicrobial Value of Olax subscorpioidea and Bridelia ferruginea on Micro-Organism Isolates of Dental Infection

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Abstract : Dental and associated oral diseases are increasingly affecting a considerable portion of the population and are considered some of the major causes of tooth loss, discomfort, mouth odor and loss of confidence. This study focused on the ethnobotanical survey of medicinal plants used in oral therapy and evaluation of the antimicrobial activities of methanolic extracts of two selected plants from the survey for their efficacy against dental microorganisms. The ethnobotanical survey was carried out in six herbal markets in Lagos State, Nigeria by oral interviewing and information obtained from an old family manually complied herbal medication book. Methanolic extracts of Olax subscorpioidea (stem bark) and Bridelia ferruginea (stem bark) were assayed for their antimicrobial activities against clinical oral isolates (Aspergillus fumigatus, Candida albicans, Streptococcus spp, Staphylococcus aureus, Lactobacillus acidophilus and Pseudomonas aeruginosa). In vitro microbial technique (agar well diffusion method and minimum inhibitory concentration (MIC) assay) were employed for the assay. Chlorhexidine gluconate was used as the reference drug for comparison with the extract results. And the preliminary phytochemical screening of the constituents of the plants were done. The ethnobotanical survey produced plants (28) of diverse family. Different parts of plants (seed, fruit, leaf, root, bark) were mentioned but 60% mentioned were either the stem or the bark. O. subscorpioidea showed considerable antifungal activity with zone of inhibition ranging from 2.650 – 2.000 cm against Aspergillus fumigatus but no such encouraging inhibitory activity was observed in the other assayed organisms. B. ferruginea showed antibacterial sensitivity against Streptococcus spp, Staphylococcus aureus, Lactobacillus acidophilus and Pseudomonas aeruginosa with zone of inhibitions ranging from 3.400 - 2.500, 2.250 - 1.600, 2.700 - 1.950, 2.225 – 1.525 cm respectively. The minimum inhibitory concentration of O. subscorpioidea against Aspergillus fumigatus was 51.2 mg ml-1 while that of B. ferruginea against Streptococcus spp was 0.1mg ml-1 and for Staphylococcus aureus, Lactobacillus acidophilus and Pseudomonas aeruginosa were 25.6 mg ml-1. A phytochemical analysis reveals the presence of alkaloids, saponins, cardiac glycoside, tannins, phenols and terpenoids in both plants, with steroids only in B. ferruginea. No toxicity was observed among mice given the two methanolic extracts (1000 mg Kg-1) after 21 days. The barks of both plants exhibited antimicrobial properties against periodontal diseases causing organisms assayed, thus up-holding their folkloric use in oral disorder management. Further research could be done viewing these extracts as combination therapy, checking for possible synergistic value in toothpaste and oral rinse formulations for reducing oral bacterial flora and fungi load.

Keywords : antimicrobial activities, Bridelia ferruginea, dental disinfection, methanolic extract, Olax subscorpioidea, ethnobotanical survey
Conference Title : ICMPNP 2016 : International Conference on Medicinal Plants and Natural Products
Conference Location : San Francisco, United States
Conference Dates : June 09-10, 2016