

ASSESSMENT OF THE MICROBIAL INHIBITORY ACTIVITY OF SELECTED PLANT EXTRACTS ON SPOILAGE ORGANISMS OF SOME LOCAL BEVERAGES

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ABSTRACT

The effect of water and alcohol extracts of bitter cola (*Garchinia kola*), bitter leaf (*Vernonia amugdalina*), neem (*Azadiachta induca*) and utazi (*Gongronema latifolium*) on spoilage organisms and sensory properties of kunnu, pito and zobo drinks were investigated. Morphological and biochemical characterization of isolates from the drinks show the presence of *Staphylococcus aureus*, *Bacillus subtilis*, *Lactobacillus plantarum*, *Saccharomyces cerevisiae*, *Saccharomyces ellipsoideus* and *Candida* sp. Aqueous and ethanolic extracts of bitter leaf, bitter cola and neem exhibited broad spectrum activity against *S. aureus*. *Subtilis* and *L. plantarum* at concentrations of 50mg/ml and 100mg/ml. The highest zone of growth inhibition was obtained for 100mg/ml of both water and ethanol extracts of bitter leaf and neem against *S. aureus*. Utazi had lowest activity against the organisms tested. The minimum inhibitory concentration of the ethanolic extracts of bitter leaf against organisms tested range from 250 µg/ml (*L. plantarum*) to 1000 µg/ml (*S. ellipsoideus*) while it is 250 µg/ml (*S. aureus*, *L. plantarum* and *B. subtilis*) to 500 µg/ml (*S. cerevisiae* and *S. ellipsoideus*) for neem extracts. The organisms were found to be more sensitive to alcohol extracts than aqueous extracts of the vegetables. Sensory evaluation showed no significant difference ($P > 0.05$) in the sensory attributes measured for zobo and kunnu treated with the water and alcohol extracts. However, significant difference ($P < 0.05$) were recorded in the taste, aroma and mouth-feel of pito treated these extracts.

Keywords: Anti-microbial screening, Plant Extracts, Spoilage organisms