Antibacterial and antioxidative activities of the various solvent extracts of banana (Musa paradisiaca cv. Mysore) inflorescences

Abstract

The inflorescence of Mysore banana (Musa paradisiaca cv. Mysore) was investigated for its antibacterial and antioxidant activities using various solvent extractions. Buds and bracts of the inflorescence showed a wide spectrum of inhibition against foodborne pathogenic bacteria such as Staphylococcus aureus (SA), Bacillus cereus (BC), Listeria monocytogenes (LM) and Vibrio parahaemolyticus (VP). The antioxidant activity was found higher in extracts with higher polarity. Methanolic extract of buds proves to have the strongest antibacterial and antioxidant activities. The 1 mg inL⁻¹ of the methanolic buds extracts were able to scavenge l,l-diphenyl-2-picryl-hydrazyl (DPPH) radical up to 77.8% and inhibit the Lipid Peroxidation (LPO) at 67.2%. Meanwhile, the TEAC, FRAP and TPC values of the bud extracts were 137.71 umolg⁻¹ extract Trolox equivalent, 2114.70 umol g⁻¹ extract Fe²⁺ equivalent, 122.03 GAE mg g⁻¹ extract, respectively. Pearson's correlation indicated significant positive correlation (r>0.9, p<0.01) between antibacterial activity, antioxidant values and TPC. The Minimum Inhibitory Concentration (MIC) values of the buds methanolic extracts were determined at 16.5 and 31.0 mg mL⁻¹ against SA and LM. It is concluded that banana inflorescence extracts could be potentially be exploited as a source of natural antibacterial and antioxidants.