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Assessment of DPPH antioxidant activity and *Saccharomyces* glucose inhibition potential of *musa paradisiaca* rhizome

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Background: *Musa paradisiaca* is a plant that has been utilized in traditional medicine. The glucose adsorption inhibition potential and *in-vitro* antioxidant activity of *M. paradisiaca* rhizome was investigated in this research.

Method & Materials: Rhizome of *M. paradisiaca* was extracted using cold maceration technique with hexane and dichloromethane solvents to obtain hexane extract (HEMP) at the concentration of 35.35 mg/mL and dichloromethane extract (DCMP) at the concentration of 22.14 mg/mL. Concentration series of tenfold dilution (hexane extract concentration series from 0.00004µg/ml to 3535µg/ml and DCM extract concentration series from 0.00002µg/Ml to 2214µg/ml) were prepared using dimethyl sulfoxide as the diluent for each extract using 10 mM, 15 mM and 20 mM of glucose concentrations. Then glucose uptake assay using yeast cells was performed under different concentrations of glucose solution. In glucose adsorption assay, 35.35 mg of HEMP of *Musa paradisiaca* rhizome and 22.14 mg of DCMP of *Musa paradisiaca* rhizome were tested under five different concentrations (5 mM,10 mM,15 mM, 20 mM and 30 mM) of glucose solution. Finally, DPPH free radical scavenging capacity of *M. paradisiaca* rhizome was determined with different concentrations of both extracts (HEMP and DCMP) to estimate its' antioxidant activity.

Results: According to the findings, the extracts improved glucose uptake via the plasma membrane of yeast cells. With a gradual increase in the concentration (3.5 mg/mL– 3.5 0.35 ng/mL) of the plant extract, a linear relationship in glucose absorption by yeast cells was observed. However, DCMP had a higher glucose absorption percentage than the HEMP of *Musa paradisiaca* rhizome. With the molar concentration of glucose in the lowest dilution (5 mM) of extracts, the glucose absorption percent of the HEMP and DCMP extract is increased.

Conclusion: Hence the minimum adsorption was recorded at 30 mM glucose concentration and maximum at 5 mM. It was proved that the test DCMP extract is capable of binding the glucose even at lower concentrations. Whereas the effect of HEMP shown variable glucose adsorption capacity at all glucose concentrations. It also shown a significant ($p<0.05$) low glucose adsorption when compared to DEMP. The glucose uptake of all concentration of 10 mM, 15 mM and 20 mM of glucose by the HEMP was shown low glucose uptake at low concentrations of HEMP and high uptake at higher concentrations. The maximum glucose uptake was observed at 3.5 mg/mL concentration of HEMP. The DCMP of *Musa paradisiaca* rhizome had a higher DPPH radical scavenging potential than hexane extract. From the findings, it was concluded that DCMP of *Musa paradisiaca* rhizome was the most active extract and it possesses antioxidant properties and significant glucose adsorption inhibition potential as shown by *in-vitro* assays.