Original Research Article

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Inhibitory potentials of phenolic-rich extracts from *Bridelia ferruginea* on two key carbohydrate-metabolizing enzymes and Fe^{2+}-induced pancreatic oxidative stress

Olakunle Bamikole Afolabi[1], Omotade Ibidun Oloyede[2], Shadrack Oludare Agunbiade[1]

1. Phytomedicine and Toxicology Laboratory, Biochemistry Unit, Department of Chemical Science, College of Science, Afe-Babalola University, P.M.B 5454, Ado-Ekiti, Ekiti State, Nigeria

2. Department of Biochemistry, Ekiti State University, P.M.B 5363, Ado-Ekiti, Ekiti State, Nigeria

ABSTRACT

OBJECTIVE: The current study was designed to evaluate the various antioxidant potentials and inhibitory effects of phenolic-rich leaf extracts of *Bridelia ferruginea* (BF) on the *in vitro* activities of some key enzymes involved in the metabolism of carbohydrates.

METHODS: In this study, BF leaf free and bound phenolic-rich extracts were used. We quantified total phenolic and flavonoid contents, and evaluated several antioxidant activities using assays for ferric reducing antioxidant power, total antioxidant activity (phosphomolybdenum reducing ability), 1,1-diphenyl-2-picrylhydrazyl and thiobarbituric acid reactive species. Also, extracts were tested for their ability to inhibit α-amylase and α-glucosidase activity.

RESULTS: The total phenolic and total flavonoid contents in the free phenolic extract of BF were significantly greater than in the bound phenolic extract. Also, all the antioxidant activities considered were significantly greater in the free phenolic extract than in the bound phenolic extract. In the same vein, the free phenolic-rich extract had a significantly higher percentage inhibition against α-glucosidase activity (IC_{50} = 28.5 µg/mL) than the bound phenolic extract (IC_{50} = 340.0 µg/mL). On the contrary, the free phenolic extract (IC_{50} = 210.0 µg/mL) had significantly lower inhibition against α-amylase than the bound phenolic-rich extract (IC_{50} =