

Oxidative DNA damage protective activity and antioxidant and hepatoprotective potentials of *Pithecellobium dulce* plant

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Pithecellobium dulce (Family: Mimosaceae) is an evergreen, spiny tree, and native to tropical America and is cultivated throughout India. Hydro-ethanolic extracts (1:1) of various parts of *P. dulce* were subjected to assess their antioxidant activity. Results showed that *P. dulce* bark had maximum TPC content (212.78 mg of GAE/g of dry weight) while the leaf had highest ascorbic acid (30.33 mg/100g of fresh weight) and carotenoid (17.12 µg/g of fresh weight) contents. In antioxidant assay, *P. dulce* bark showed lowest inhibitory concentration (IC₅₀ = 2.62 µg/ml) for free radical scavenging activity and highest reducing power (0.25 ASE/ml) while fruit peel (ripened) showed lowest IC₅₀ for lipid peroxidation (202.62 µg/ml), non site specific hydroxyl ion scavenging activity (3.60 µg/ml) and superoxide anion radical scavenging activity (1.08 µg/ml). The bark also showed better oxidative DNA damage protective activity against Fenton reagent and UV rays induced damage in comparison to standard silymarin and catechin. HPLC analysis showed presence of higher gallic acid and catechin contents in the bark. *In vitro* experiments on *P. dulce* bark showed restoration of antioxidant status in primary rat hepatocyte cells against acetaminophen induced oxidative stress. Superoxide dismutase experienced better activity at 5 µg/ml concentration and also best inhibition of MDA formation at same concentration. Under *in vivo* conditions *P. dulce* bark extract showed hepatoprotective activity at concentrations of 100 and 200 mg/kg of bw showing significant reduction in hepatic enzymes when compared with acetaminophen treated groups. Results strongly indicate that *P. dulce* bark is important source of natural antioxidants.

Biography

R.L. Singh is presently holding the position of Professor and Head of the Department of Biochemistry and Coordinator, Biotechnology Programme at Dr. Ram Manohar Lohia Avadh University, Faizabad. He did his Ph.D. from Indian Institute of Toxicology Research, Lucknow in 1987. Prof. Singh worked in various capacities at UP Pollution Control Board and two Universities. He led and completed various projects funded by national agencies and guided 23 Ph.D. students. His main area of work is Nutraceutical and Environmental Biochemistry. He published more than 75 research papers, delivered invited lectures, and chaired scientific and technical sessions in various conferences and symposia.

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