ABSTRACT

Pharmacognostical, Phytochemical and Biological Evaluation of Unexplored
Mucuna cochinchinensis (Lour) Cheval Seeds
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Increased incidence and mortality of breast cancer in world forced to pursue the current study on Mucuna cochinchinensis, a leguminous herb, which is reported to have enormous potential as food, fodder and in Parkinson’s disease. The selected taxon was confirmed by pharmacognostical characterization. Basic criterion, the presence of minor flavonoids (isoflavones) in legumes was the target and work was preceded for antioxidant and anticancer preliminary screening with methanolic (MMC) and ethyl acetate (EMC) seed extracts. Isoflavones (Genistein and Daidzein) were identified by modern analytical technique; high performance liquid chromatography coupled with mass spectroscopy (HPLC-MS) and quantified using high performance thin layer chromatography densitometric analysis (HPTLC) in EMC. In-vivo antibreast cancer activity for EMC was performed by 7, 12-Dimethylbenz (a) anthracene induced breast tumor in Sprague Dawley female rat models. Antioxidant parameters, body weight and the apoptosis inhibiting protein B cell lymphoma (Bcl-2) expressions were analyzed. The binding ability of Genistein and Daidzein to Bcl-2 was studied by in-silico technique. Reduction in tumor size, reversion back of body weight, enzyme and non-enzyme antioxidants in serum and breast homogenate tissue parameters to near normal level significantly different from breast cancer control (p<0.01) substantiate the antibreast cancer activity of EMC. Bcl-2 expressions were silenced by EMC which showed the potency of extract in
chemo-resistant tumors. Since the constituents identified are classified under phytoestrogens, estrogenic activity was determined using alkaline phosphatase induction assay and found to be weak estrogenic potential and dose dependant. Biological activity screening extends to antidiabetic activity of EMC and antimicrobial activity for both MMC and EMC. Results obtained were significant (p<0.01) in normalizing the glucose concentration and plasma insulin levels. Antimicrobial evaluation proved both the extracts as potent antibacterial agents and the efflux modulation was observed with MMC in efflux pump assay. To conclude ethyl acetate extract of *M. cochinchinensis* seed could be of therapeutic use to mankind for the treatment of breast cancer, diabetes and as co-therapy with standard drugs in breast cancer and microbial infections.