

In vitro Antioxidant, Anti-Diabetic and Nutritional Properties of *Breynia retusa*

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Abstract : Natural products serves human kind as a source of all drugs and higher plants provide most of these therapeutic agents. These products are widely recognized in the pharmaceutical industry for their broad structural diversity as well as their wide range of pharmacological activities. Euphorbiaceae is one of the important families with significant pharmacological activities, of which many species has been used traditionally for the treatment of various ailments. *Breynia retusa* belongs to the family Euphorbiaceae is used to cure ailments like body pain, skin inflammation, hyperglycaemia, diarrhoea, dysentery and toothache. Flowers and young leaves of *B. retusa* are cooked and eaten, roots are used for meningitis. The juice of the stem is used in conjunctivitis and leaves as poultice to hasten suppuration. Based on the strong evidences of traditional uses of *Breynia retusa*, the present study was focused on nutraceuticals evaluation of the species with special reference to oxidative stress and diabetes. Both leaves and stem of *B. retusa* were extracted with different solvents and analyzed for radical scavenging ability wherein ABTS.+ (8396.95±1529.01 µM TEAC/g extract), phosphomolybdenum (17.34±0.08 g AAE/100 g extract) and FRAP (6075.66±414.28 µM Fe (II) E/mg extract) assays showed good radical scavenging activity in stem. Furthermore, leaf extracts showed good radical inhibition in DPPH (2.4 µg/mL), metal ion (27.44±0.09 mg EDTAE/g extract) scavenging methods. The α-amylase and α-glucosidase inhibitors are currently used for diabetic treatment as oral hypoglycemic agents. The inhibitory effects of the *B. retusa* leaf and stem ethyl acetate extracts showed good inhibition on α-amylase (96.25% and 95.69 respectively) and α-glucosidase (54.50% and 50.87% respectively) enzymes compared to standard acarbose. The proximate composition analysis of *B. retusa* leaves contains higher amount of total carbohydrates (14.08 g Glucose equivalents/100 g sample), ash (19.04 %) and crude fibre (0.52 %). The examination of mineral profile explored that the leaves was rich in calcium (1891 ppm), sulphur (1406 ppm), copper (2600 ppm) and magnesium (778 ppm). Leaves sample revealed very minimal amount of anti-nutrient contents like trypsin (14.08±0.03 TIU/mg protein) and tannin (0.011±0.001 mg TAE/g sample). The low anti nutritional factors may not pose any serious nutritional problems when these leaves are consumed. In conclusion, it is very clear that dietary compounds from *B. retusa* are suitable and promising for the development of safe food products and natural additives. Based on the studies, it may be concluded that nutritional composition, antioxidant and anti-diabetic activities this species can be used as future therapeutic medicine.

Keywords : *Breynia retusa*, nutraceuticals, antioxidant, anti diabetic

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