

Bangladesh Journal of Pharmacology

Volume: 10; Number 3; Year 2015



Cite this article as: Alluri N, Majumdar M. Evaluation of α -glucosidase inhibition of *Drimia nagarjunae*, a medicinal plant from South India. Bangladesh J Pharmacol. 2015; 10: 635-36.



Letter to the Editor

Evaluation of α -glucosidase inhibition of *Drimia nagarjunae*, a medicinal plant from South India

Sir,

Diabetes mellitus (type 2) is a metabolic disorder which results due to hyperglycemia associated with the imbalance in carbohydrate, fat and protein metabolism. There is an exponential increase in the incidence of diabetes the world over, especially in the Indian subcontinent (Kumar et al., 2015). One therapeutic approach for treating diabetes is to decrease postprandial hyperglycemia. α -Amylase and α -glucosidase are the key enzymes involved in the digestion of carbohydrates (Ali et al., 2006). α -Glucosidase is the key enzyme catalyzing the final step in the digestive process of carbohydrates. Hence, α -glucosidase inhibitors can retard the liberation of D-glucose from dietary complex carbohydrates and delay glucose absorption, resulting in reduced postprandial plasma glucose levels and suppression of postprandial hyperglycemia.

Drimia nagarjunae Hemadri et Swahari (Family: Liliaceae) is an endangered Indian medicinal plant, ethnopharmacologically used to treat breast abscess and to cure piles (Hemadri 2011; Sunil, 2011). *D. nagarjunae* also showed prominent anticancer activity

compared to standard drug, adriamycin (Alluri and Majumdar, 2015). The present investigation was aimed to perform α -glucosidase inhibition of *D. nagarjunae*.

The leaves and bulbs were shade dried and powdered. The powdered samples were extracted sequentially with hexane, chloroform, ethyl acetate, methanol and water at 1:10 (w/v) concentrations by using soxhlet apparatus. The extracts were filtered through Whatman No. 1 filter paper and the filtrate collected. The filtrates were concentrated by rotary evaporator, stored at 4°C and used for further studies. Various concentrations of crude extracts, ranging from 0.5, 1, 1.5 and 2 mg/mL were prepared in DMSO and α -glucosidase inhibition of various extracts was carried out according to Kim et al., (2010). Streptokinase and DMSO were used as positive and negative control respectively.

The α -glucosidase inhibitory activity was measured in percentage (%) inhibition of extracts. Among all the tested extracts, α -glucosidase inhibitory activity exhibited only in aqueous extracts of leaves and bulbs. The extracts were found to exhibit dose-dependent inhibition. The bulb extract exhibited maximum inhibition of $77.2 \pm 0.5\%$ whereas streptokinase exhibited $91.2 \pm 0.9\%$ at 2 mg/mL (Figure 1). To the best of our knowledge this is the first report on α -glucosidase inhibitory

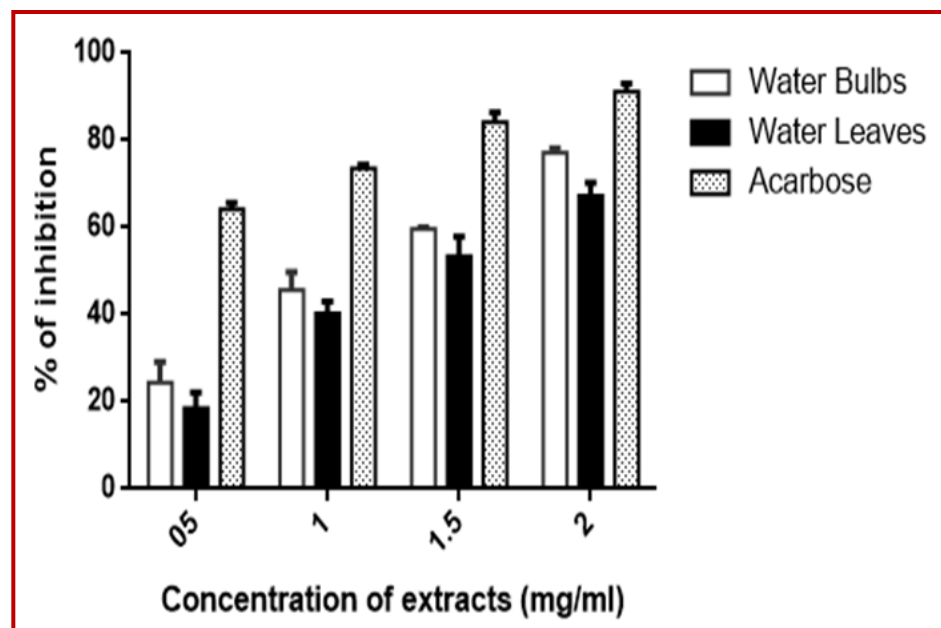


Figure 1: α -Glucosidase inhibitory activity of *D. nagarjunae*

activity of *D. nagarjunae*.

Narendranath Alluri and Mala Majumdar

Center for Postgraduate Studies, Jain University, 18/3, 9th main, 3rd block, Jayanagar, Bangalore 560011, India.

Corresponding author: malamajumdar51@gmail.com

References

Ali H, Houghton PJ, Soumyanath A. α -Amylase inhibitory activity of some Malaysian plants used to treat diabetes, with particular reference to *Phyllanthus amarus*. J Ethnopharmacol. 2006; 107: 449-55.

Alluri N, Majumdar M. *In vitro* anticancer potential and GC-MS analysis of *Drimia nagarjunae*, an endangered medicinal plant. Bangladesh J Pharmacol. 2015; 10: 303-07.

Hemadri K. A Treatise on tribal medicine. Dr. Koppula Hemadri's House of Tribal Medicine, 2011, pp 35-36.

Kim JS, Kwon YS, Chun WJ, Kim TY, Sun J, Yu CY. Rhus verniciflua stokes flavonoid extracts have anti-oxidant, antimicrobial and α -glucosidase inhibitory effect. Food Chem. 2010; 120: 539-43.

Kumar SB, Ravisankar A, Mohan A, Kumar PD, Katyarmal DT, Sachan A, Sarma KVS. Effect of oral hypoglycaemic agents on bone metabolism in patients with type 2 diabetes mellitus and occurrence of osteoporosis. Indian J Med Res. 2015. 141: 431-37.

Sunil N. Plant biodiversity and its conservation in Institute for Social and Economic Change (ISEC) Campus, Bangalore: A case study. J Biodiversity. 2011; 2: 9-26.

Vichai V, Kirtikara K. Sulforhodamine B colorimetric assay for cytotoxicity screening. J Nat Protoc. 2006; 1: 1112-16.
