



Category: Miscellaneous

Effect of ethanolic bark extract of the mangrove plant *Xylocarpus granatum* on oxidative stress indices in streptozotocin-induced diabetic mice testis

Bhabasha Gyanadeep Utkalaja¹, Jasmine Nayak¹, Swagat Kumar Das^{1,2}, H.N. Thatoi³ and Luna Samanta^{1*}

¹Redox Biology Laboratory, Department of Zoology, School of Life Sciences, Ravenshaw University, Cuttack 753003, Odisha, INDIA

²Department of Biotechnology, College of Engineering and Technology, Bhubaneswar, Odisha, INDIA

³Department of Biotechnology, North Odisha University, Baripada, Odisha, INDIA

Presenting author: bhabasha.gyanadeep7@gmail.com; *Corresponding author: luna_sumanta@rediffmail.com

Abstract

Pervasiveness of Diabetes Mellitus is advancing all over the world and uncontrolled state of hyperglycemia due to defects in insulin signaling results in severe complications including deleterious effect on male reproductive function where oxidative stress is implicated. The objective of this study is to investigate the effect of different concentration of *Xylocarpus granatum* bark extract (Xg) and compare the effects with commercial drug Glibenclamide (Glb) in testis of streptozotocin (STZ) induced diabetic BALB/c mice as a function of oxidative stress. Mice were divided into 6 groups, viz; Group-I: Control, Group-II: 200 mg Xg/Kg/day body weight, Group-III: STZ (125 mg/kg/day body weight), Group-IV: STZ+Glb (3 mg/kg /day body weight), Group-V: Xg(100 mg/Kg/day body weight), Group-VI: Xg (200 mg/Kg/day body weight) were administered orally for 30 days. The results showed low sperm count with increased lipid peroxidation in testis of diabetic mice than other groups with diminished antioxidant enzymes (Superoxide dismutase and catalase) which was restored by 200 mg/day/kg treatment with Xg extract. On the other hand, though significant alterations in testicular glutathione content and activities of Glutathione Peroxidase/reductase and Glutathione S transferase was observed in response to the treatments; the plant extract didn't show a linear dose response. Since Glb has a greater risk of cholestatic jaundice and is not recommended to patients with G6PD deficiency, this natural product may be developed into an anti-diabetic drug. However, more linear dose response titrations are necessary to validate the efficacy of the extract.

References

- [1] Das, S.K., Samantaray, D., Patra, J.K., Samanta, L. and Thatoi, H. (2016) Antidiabetic potential of mangrove plants: a review. *Front Life Sci* 9: 75-88. <http://dx.doi.org/10.1080/21553769.2015.1091386>
- [2] Shi, G.J., Li, Z.M., Zheng, J., Chen, J., Han, X.X., Wu, J., Li, G.Y., Chang, Q., Li, Y.X. and Yu, J.Q. (2017) Diabetes associated with male reproductive system damages: onset of presentation, patho physiological mechanisms and drug intervention. *Biomed Pharmacother* 90: 562-574. <https://doi.org/10.1016/j.biopha.2017.03.074>

Citation: Utkalaja, B.G., Nayak, J., Das, S.K., Thatoi, H.N. and Samanta, L. Effect of ethanolic bark extract of the mangrove plant *Xylocarpus granatum* on oxidative stress indices in streptozotocin-induced diabetic mice testis [Abstract]. In: Abstracts of the NGBT conference; Oct 02-04, 2017; Bhubaneswar, Odisha, India: Can J biotech, Volume 1, Special Issue, Page 155. <https://doi.org/10.24870/cjb.2017-a141>