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## Gelam honey scavenges the STZ-induced ROS generation and insulin impairment via MAPK/JNK signalling in Wistar rats

Sher Zaman Safi<sup>1</sup> and Rajes Qvist<sup>2</sup><sup>1</sup>Interdisciplinary Research Center in Biomedical Materials, Pakistan<sup>2</sup>University of Malaya, Malaysia

Increased ROS generation and impaired insulin secretion are the common cause complications such as kidney problem, loss of vision, heart problem and amputation of legs that are associated with diabetes. In this study we have investigated molecular mechanisms of the protective effect of Malaysian Gelam honey on STZ induced ROS generation and insulin impairment. Methodology A total of 30 Wistar rats were divided into 3 groups, normal groups, STZ induced diabetic group, and STZ induced diabetic group treated with honey extract. MAPK/JNK pathway signalling was investigated using their respective antibodies with the help of western blotting. ELISA was used to measure insulin levels. ROS/RNS were measured using Oxiselect in vitro ROS/RNS assay kit. Results STZ induced diabetes in rats showed a marked increase in ROS and bloodglucose

levels, insulin secretion was significantly reduced. Treatment with gelam honey extract significantly improved the STZ induced, impaired insulin secretion, high glucose levels and increased generation of ROS. To probe the underlying mechanisms, we investigated MAPK/JNK signalling. In the STZ induced diabetic rats group, associated genes in the MAPK/JNK pathway high phosphorylation which was significantly reduced, when treated with Gelam honey extract.

**Conclusion:** Gelam honey treatment showed a protective effect in lowering the glucose and ROS levels. The insulin secretion was significantly improved. We observed MAPK/JNK pathway as modulator of these changes.

rajesqvist2004@yahoo.com

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