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The medicinal implication of a Himalayan herb *Gymnadenia orchidis* LINDL against type 2 diabetes mellitus

Brajadulal Chatopadhyay
Jadavpur University, India

Diabetes, the world largest metabolic disorder has become a serious threat to public health. The management of diabetes by synthetic drugs causes many unwanted complications. The study was designed to explore an alternative herbal medicine (root Salep of Gymnadenia orchidis Lindl) against type-2 diabetes to achieve a complications free diabetes management. The Streptozotocin (STZ) induced-diabetic rats were supplemented with root Salep orally daily at an effective dose (200 mg/g of body weight). The body weights and fasting blood glucose levels were measured periodically for 32 days. After treatment period, the animals were sacrificed and glycosylated haemoglobin, lipid profiles, antioxidant enzymes levels, liver function enzymes etc. were determined. Phytochemically determined terpenoids was extracted from the root and orally supplemented (4 mg/g body weight) to the induced-diabetic animals. Normalization of fasting blood glucose levels, significant ($P < 0.001$) decrement of glycosylated haemoglobin percentage, liver enzymes activities and increase body weights and anti-oxidants levels were noted for the Salep supplemented diabetic rats. Terpenoids present an adequate amount in the root of Gymnadenia orchidis Lindl played the key role in such observations. Histoplathological parameters of kidney, liver and pancreas tissues were also examined to reveal the differences between treated and non treated groups. Here also improvement of insulin production has been revealed in diabetic groups treated with root Salep and treated with extracted terpenoids only. We can conclude that terpenoids plays the major role in reducing the diabetic condition and improving the overall health condition of the treated diabetic rats. The root Salep of Gymnadenia orchidis Lindl or its terpenoids may be used as potentially herbal therapeutic agent for long term and effective solution against type-2 diabetes mellitus.

Biography

Brajadulal Chattopadhyay is currently working in the Department of Physics, Jadavpur University, India. He has completed his Masters (1987) and PhD (1994) degrees from the University of Calcutta, India and worked at Bose Institute, India and Technical University of Delft, the Netherlands. He has been working in the field of bio-concrete development by using hot spring anaerobic bacteria to enhance the strength and durability of concrete structures since 2001 and published his work in many internationally reputed journals. He has already supervised 20 PhD students and hold one national and two international patents in his research career.

bdc_physics@yahoo.co.in