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Commiphora and Astragalus, Remedy to Heal Type 2 Diabetes

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A huge population of medicinal plants has been identified in the Indian medicine system including traditional medicines for the treatment of diabetes, which function individually or in combination and hence have been of significant interest. As per the figures available, nearly three-quarters of the global world population relies mostly on plants and plant extracts for their everyday health care requirements. More than 30% of the entire plant species, at a time or additional, were utilized for therapeutic purposes. Medication with medicinal plants is well-thought-out to be very safe as there are minimum or no adverse effects.

Diabetes is represented as a collection of physical illnesses characterized by hyperglycaemia, the cause of a decrease in insulin production (I) or insufficient insulin utilization (type-II) (type-II). Commiphora molmol (CM), is also identified in folk medicine as myrrh. The oleo-gum resin derived from CM is found in the bark of trees of the Burseraceae family. In traditional medicine, they have been utilized for many years, originally found in North Africa, Arabia, and Northern Somalia. Astragalus membranous (AM), popularly known as membranous milk-vetch root in English, Hwanggi in Korean and Huang qi in Chinese, is considered one of the most important constituents of apoptogenic Qi tonifying Chinese material medica. The current study aimed to investigate the antidiabetic potential of these 2 plants, namely, CM and AM, based on experimental screening of plants which is a major and important part of the study.

Myrrh (C. molmol) resin and AM root was obtained at a commercial market (Alraz herbs Co.) in Buraidah, Saudi Arabia. C. molmol was obtained from Farasan Island in the Red Sea. The resins were ground into a coarse powder and the roots were chopped into little pieces with a blender. In a conical flask (200 mL), powdered plant material (resin and root) was stored and 100 mL of solvents such as ethanol and water were added individually. The acute oral dose-ranging research of alcoholic extract, water extract and hydro-alcoholic extract of both plants, CM and AM was tested in Swiss albino mice using the OECD 425 guideline. Data were subjected to a one-way analysis of variance together with Dunnett's multiple comparisons test.

The dose-ranging research lasted for 14 days and was aimed to estimate the adverse/toxic effects of a single dose of the various extracts of CM and AM at a graded range of doses. Insulin has an anabolic impact on protein metabolism and increases the production of protein and inhibits protein degradation. Another significant effect of insulin is to decrease adipose tissue lipolysis, which may lead

to suppression of muscle tissue lipolysis and proteolysis. Glucose-6-Phosphate Dehydrogenase (G6PD) is the main enzyme and restricts the pentose phosphate pathway, leading to the formation of ribose-5-phosphate and NADPH. In diabetic rats, there was an increased activity of glucose6-phosphatase which provided hydrogen binding to NADP+ in the form of NADPH and from glucose, it improves the synthesis of fats, i.e., lipogenesis and ultimately incorporates to increased blood sugar levels.

In healthy individuals, the pancreas secretes insulin endogenously in a pulsatile fashion. The irreversible breakdown of the islets of Langerhans is indicated by hyperinsulinemia and hyperglycaemia. When compared to STZ-induced diabetic rats, rats treated with plant extracts showed a considerable rise in serum insulin levels, indicating the reactivation of beta cells, which may be brought on by the stimulating effects of the bioactive phytoconstituents found in plant extracts. The hypoglycaemic action of CM and AM extract is thought to have resulted from the stimulation of glycogen synthesis, which suppressed glycogen phosphorylase and other gluconeogenic enzymes and increased hepatic glycogen levels. The nonenzymatic glycation of nucleic acids, lipids, and proteins occurs because of the hyperglycaemic state and metabolic change, which increases the generation of highly reactive free radicals.

JOURNAL REFERENCE

Khan, M.M.U., H. Khalilullah, G.O. Elhasan, T. Mahmood and F. Ahsanr *et al.,* 2022. Anti-diabetic potential of common Saudi medicinal herbs *Commiphora molmol* and *Astragalus membranaceus* extracts in diabetic rats. Int. J. Pharmacol., 18: 475-487.

KEYWORDS

Commiphora molmol, Astragalus membranaceus, diabetes, medicinal plant, biomarkers, oxidative stress markers