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**Herbal formulation replenishes  $\beta$ -cells by down-regulating the  $\text{Ca}^{2+}$  and JNK signaling cascade in diabetic rats****Wafa Majeed**

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Diabetes mellitus is becoming the most fatal disease globally. Glycemic control is primarily based on the utilization of hypoglycemic agents and insulin. These treatments are associated with severe side effects, so there is a renewed interest in use of plant based remedies. Present study was conducted with aim to provide researchers with information regarding the therapeutic effectiveness and molecular mechanisms involved in anti-diabetic potential of polyherbal formulation containing *Momordica charantia*, *Syzygium cumini*, *Acacia nilotica*, *Elettaria cardamomum*, *Cicer arietinum*, *Foeniculum vulgare* and *Gymnema sylvestre*. Diabetes was induced by administering the alloxan monohydrate intraperitoneally (150 mg/kg) in wistar rats and graded doses of polyherbal formulation were administered to experimental subjects for 28 days. Polyherbal formulation significantly reversed the alloxan induced hyperglycemia by improving the biochemical, histopathological and oxidative stress parameters in dose dependent manner. The effect of polyherbal formulation was also studied on different signaling pathways including insulin signaling pathway (Pdx-1, Ins-1, Ins-2, IGF-1), calcium signaling pathway (Grk-2, Calm-2, FOXA 2) and MAPK downstream c-Jun N terminal kinase (JNK) pathway (Traf-4, Traf-6, Mapk-8) by using quantitative real time PCR (qRT-PCR) based analysis to investigate the relative mRNA expression analysis. Current study has revealed the antihyperglycemic potential of polyherbal formulation by improving the performance of pancreatic endocrine tissues via up-regulation of insulin signaling cascade and potentially blocking the cellular stress pathways through down regulation of particularly calcium and JNK signaling cascade.

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