ABSTRACT
Pharmacological evaluation of polyherbal preparations for its antidiabetic profile

Diabetes mellitus is a metabolic disorder and the management is an important criterion for pharmacotherapy. Literature survey reveals that plethora of plants play a vital role in preventing and managing diabetes mellitus. Present study is undertaken to screen the herbal extracts of Eugenia jambolana and Cinnamomum zeylenicum and its combinations using in vitro and in vivo evaluation techniques for its antidiabetic activity. The direct soxhlet method was employed for the extraction using polar and non-polar solvents.

The in vitro evaluation was performed by using cell culture assays, alpha-glucosidase inhibition and antioxidant property. Hydroalcoholic and aqueous extracts of the plants were screened against 3T3-L1, C2C12 and HepG2 cells using a glucose uptake assay. The results showed that the glucose uptake was significantly high in APKJ-004 polyherbal extract when compared with other extracts. α-glucosidase inhibitory activity was found in all the extracts and they were comparable to acarbose and the significant inhibitory activity was found in the polyherbal extract APKJ004 (IC$\text{}_{50}$147.2µg/ml).

The in vitro antioxidant potential revealed that the extract APKJ004 is more potent and is comparable to the standard ascorbic acid. Further the polyherbal extract APKJ-004 was selected and subjected to in vivo studies i.e., acute and sub acute studies for the determination of safety and efficacy. APKJ-004 has significantly decreased the blood glucose levels indicating the potential
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antidiabetic activity. All the microscopic changes noticed in the study appeared to be incidental as their frequency and severity remained identical for the control and the treated animals. Hence it can be concluded that polyherbal extract-APKJ004 tends to act as a potent antidiabetic agent with minimal or no side effects. The results of invitro and invivo evaluations on the polyherbal preparations are encouraging and may be useful in the pharmacotherapy of diabetes and aid in the treatment of diabetes mellitus.