



Mechanistic *in vitro* evaluation of *Prosopis farcta* roots as an antidiabetic folk medicinal plant

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Background and objectives: *Prosopis farcta* has been used as a traditional herbal medicine for treating *diabetes mellitus*. The aim of this study was investigating the antidiabetic mechanisms of infusion extract of *P. farcta* and discovering the active extract for the first time. **Methods:** Six different extracts of *P. farcta* were prepared using five different solvents [ethanol, *n*-hexane, acetone, ethanol: water (1:1 v/v), and water]. Cytotoxicity and cell proliferation assays were performed on mouse pancreatic β -cells (β -TC₃) using the MTT method. The effects of *P. farcta* on glucose metabolism (in HepG-2 hepatocellular carcinoma cell line) were evaluated. The protective effects of various *P. farcta* extracts on cytotoxicity, mitochondrial membrane potential (MMP), and streptozotocin-induced apoptosis in β -TC₃ cells were investigated. **Results:** *P. farcta* did not affect the viability of β -TC₃ and HepG-2 cells up to 0.5 mg/ml. Infusion (INF) was the only extract which could protect cells against STZ. The proliferation results showed *P. farcta* extract did not increase proliferation in β -TC₃ cell line compare to control. **Conclusion:** Only INF attenuated the death and apoptosis induced by STZ in β -TC₃ cells. It could exert a significant glucose-lowering effect.

Keywords: diabetes mellitus, HepG-2, *Prosopis farcta*, β -TC₃ cells