

Separation, Characterization and Pharmacological Studies of Some Hypoglycemic Active Components in Alfalfa

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ABSTRACT

The present study investigates the hypoglycemic activity of an aqueous extract of alfalfa (*Medicago sativa*) leaves and focuses on the isolation and purification of its active constituents. Preliminary *in vivo* experiments demonstrated that alfalfa leaf extract possesses significant antihyperglycemic effects in both normal and alloxan-induced diabetic rodents. Building upon these findings, an elaborate purification protocol was employed—including gel filtration, ion-exchange chromatography, and hydrophobic interaction chromatography—to isolate a biologically active hypoglycemic protein fraction, designated as HF-I. Intraperitoneal administration of HF-I at doses of 5 and 10mg/kg body weight resulted in a marked reduction in blood glucose levels in both normal and diabetic mice. Notably, HF-I also enhanced glucose tolerance and stimulated insulin secretion from isolated hamster pancreatic islets under both low (3.3mM) and high (16.7mM) glucose conditions. To the best of our knowledge, this is the first report describing a hypoglycemic protein isolated from alfalfa. These findings suggest that HF-I holds promising potential for the development of novel therapeutic agents targeting diabetes mellitus.

