

Antihyperglycemic and antioxidative effects of *Lygodium microphyllum* in alloxan induced diabetic rats, International Journal of Pharmacy and Pharmaceutical Sciences

ABSTRACT

Objective:

The antihyperglycemic and antioxidative effects of *L. microphyllum* were evaluated by using in vivo methods in normal and alloxan induced diabetic rats. Methods: Diabetes was induced in Sprague Dawley rats by injecting alloxan through intravenous (i. v) at a dose of 100 mg/kg of body weight. Aqueous extract of *L. microphyllum* at different doses (400, 200 and 100 mg/kg of body weight) was administered orally (orogastric intubation) for 14 d. Blood glucose and oxidative stress markers were measured. Hematoxylin and eosin staining method were used to examine the pancreatic tissues.

Results:

At the 14 d interval, fasting blood glucose showed a reduction in serum glucose levels in animals pretreated with *L. microphyllum* compared with alloxan alone treated group. Oxidative stress was noticed in rat's pancreatic tissue as evidenced by a significant decrease in glutathione level, glutathione reductase, glutathione-S-transferase, and catalase activities. Malondialdehyde showed a significant increase compared to the normal saline-treated control group. Serum biochemistry and oxidative stress markers were consistent with the pancreatic histopathological studies. Treatment of diabetic rats with *L. microphyllum* at a dose level of 100, 200 and 400 mg/kg body weight leaves extract for 14 d significantly prevented these alterations and attenuated alloxan-induced oxidative stress ($P < 0.05$).

Conclusion:

The results of the present study indicated that the antihyperglycemic potential of *L. microphyllum* might be ascribable to its antioxidant and free radical scavenging properties. Thus, it is concluded that *L. microphyllum* may be helpful in the prevention of diabetic complications associated with oxidative stress.