عنوان مقاله:

Hypoglycemic activity of the ethyl acetate extract from Smilax glabra Roxb in mice: Biochemical and histopathological studies

محل انتشار:

مجله علوم پایه پزشکی ایران, دوره 23, شماره 12 (سال: 1399)

تعداد صفحات اصل مقاله: 7

نویسندگان:

Phuong Nguyen - *Institute of Biotechnology, Vietnam Academy of Science and Technology, Hanoi, Vietnam*

Quang Ngo - *Institute of Chemistry, Vietnam Academy of Science and Technology, Hanoi, Vietnam*

Minh Nguyen - *University of Science and Technology of Hanoi, Vietnam Academy of Science and Technology, Hanoi, Vietnam*

Lien Quach - *ıInstitute of Biotechnology, Vietnam Academy of Science and Technology, ١٨ Hoang Quoc Viet Road, Hanoi, Vietnam*

Stephen Pyne - *School of Chemistry and Molecular Bioscience, University of Wollongong, Wollongong, New South Wales, Australia*

خلاصه مقاله:

Objective(s): This research was carried out to investigate the hypoglycemic activity of the ethyl acetate (EtOAc) extract from the roots of Smilax glabra Roxb, which strongly exhibit inhibitory activity against α-glucosidase and α-amylase on in vivo type 2 diabetic model. Materials and Methods: Column chromatography combined with crystallization was used to isolate the active fraction and compounds. Chemical structures of the compounds were determined based on the analysis of the spectroscopic data and comparison with the literature data. The α-glucosidase inhibitory activity (AGI) and the α-amylase inhibitory activity (AAI) were determined quantitatively spectrophotometrically using p-nitrophenyl α-D-glucopyranoside and soluble starch as substrates, respectively. The hypoglycemic activity was examined by evaluating its effects on glucose and insulin levels, insulin resistance, and histopathology of the pancreatic islets and livers in diabetic induced mice administrated with nicotinamide-streptozotocin. Results: The EtOAc extract and the bioactive compounds astilbin and 5-O-caffeoylshikimic acid in the extract were isolated and confirmed in structures, AGI, and AAI. The treatment at the doses of 500 and 1000 µg/kg of body weight reduced blood glucose levels down to the physiological level of the physical controls in the diabetic mice after two weeks ($p < 0.05$). Moreover, the treatment improved insulin sensitivity. Histopathology analysis showed recovering effects in the size of the pancreatic islets and no damaging effects on the liver after treatment compared with the control group. Conclusion: Our data suggest that the EtOAc extract possesses hypoglycemic activity and has an antidiabetic potential for therapeutic applications.

کلمات کلیدی:

Alpha, glucosidase Alpha, amylase Diabetes Ethyl acetate (EtOAc), extract In vivo model Smilax glabra Roxb