

EVALUATION OF THE UNEXPLORED INHIBITORY POTENTIAL OF NATIVE CYPRIOT PLANTS AGAINST DIGESTIVE ENZYMES ASSOCIATED WITH HYPERGLYCEMIA

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In recent years, there has been a great deal of awareness for the development of alternative herbal medicines for the treatment of type 2 diabetes with the aim of delaying or preventing glucose metabolism. It is common sense that the inhibition of α -amylase and α -glucosidase enzymes can be an important strategy to control blood glucose levels, offering positive effects in the prevention of diabetes mellitus. The present work aims to investigate the *in vitro* inhibitory potential of some native Cypriot plants, belonging to the Apiaceae, Asteraceae, Lamiaceae, and Rosaceae families, against carbohydrate hydrolyzing enzymes. A sequential chemical extraction was performed with a defined series of solvents of increasing polarity (hexane, acetone, methanol, and water) using ultrasound-assisted extraction. The α -amylase and α -glucosidase inhibitory potential as well as the total phenolic and flavonoid contents of the extracts were determined. The results demonstrated that the antidiabetic effects of the plant extracts were associated with their phenolic contents. More specifically, methanolic and aqueous extracts, which demonstrated the highest total phenolic (2.19-261.80 and 2.91-78.54 mg gallic acid equivalents/g sample, respectively) and flavonoid contents (2.49-26.22 and 2.91-78.54 mg catechin equivalents/g sample, respectively), exhibited the strongest α -amylase (7.31-43.07 and 0.91-61.11%, respectively, at a concentration level of 10 mg/mL) inhibitory effects. Furthermore, a significant α -glucosidase inhibitory potential was observed for all types of extracts (hexane: 17.10-87.82%, acetone: 17.97-99.20%, methanol: 8.77-99.11%, water: 2.74-70.73%, at a concentration level of 0.5 mg/mL). Among the examined samples, *Sarcopoterium spinosum* (L.) Spach demonstrated the highest inhibitory activities on α -amylase and α -glucosidase enzymes. Therefore, this plant is considered as a potential antidiabetic agent and should be further studied for its potential in controlling or preventing diabetes.