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Phytochemical characterization of polyphenolic compounds with HPLC-DAD-ESI-MS and evaluation of lipid-lowering capacity of aqueous extracts from Saharan plant *Anabasis aretioides* (Coss & Moq.) in normal and streptozotocin-induced diabetic rats

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ABSTRACT

OBJECTIVE: *Anabasis aretioides* (Coss & Moq.), a Saharan plant belonging to Chenopodiaceae family, is widely distributed in semi-desert areas from the Tafilalet region of Morocco. This plant is extensively used by local population against diabetes and cardiovascular disorders. The purpose of the study was to investigate the effect of the aqueous *A. aretioides* extract on lipid metabolism in normal and streptozotocin (STZ)-induced diabetic rats and to identify the polyphenolic compounds present. In addition, the *in vitro* antioxidant activity of the aqueous *A. aretioides* extract was also evaluated.

METHODS: The effect of an aerial part aqueous extract (APAE) of *A. aretioides* (5 mg/kg of lyophilized *A. aretioides* APAE) on plasma lipid profile was investigated in normal and STZ-induced diabetic rats ($n = 6$) after once daily oral administration for 15 days. The aqueous extract was tested for its 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical-scavenging activity. Polyphenolic compounds in the extracts were definitively characterized by high-performance liquid chromatography-diode array detection-electrospray ionization-mass spectrometry.

RESULTS: In diabetic rats, oral administration of *A. aretioides* APAE provoked a significant decrease in both plasma cholesterol and triglyceride levels from the first to the second week ($P < 0.01$). A significant decrease on plasma triglyceride levels was also observed in normal rats ($P < 0.01$), where the reduction was 53%. In addition, the phytochemical analysis revealed the presence of 12 polyphenolic compounds. Moreover, according to the DPPH radical-scavenging activity, the aqueous extract showed an *in vitro* antioxidant activity.

CONCLUSION: Aqueous *A. aretioides* APAE exhibits lipid-lowering and *in vitro* antioxidant activities. Many polyphenols were present in this extract and these phytoconstituents may be involved in the pharmacological activity of this plant.

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Keywords: *Anabasis aretioides*; 1,1-diphenyl-2-picrylhydrazyl; antioxidant activity; phytochemical analysis; lipid metabolism; polyphenolic compounds

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