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HYPOGLYCEMIC POTENTIAL OF CORNELIAN CHERRY

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The latest epidemiological estimation suggests that the worldwide prevalence of metabolic disorders related to diabetes is rising. Among numerous harmful factors, hyperglycemia and oxidative stress are proposed as crucial in the progression of this disease and the development of micro- and macro-vascular complications. Herbal products are recognized as useful therapeutic agents in diabetes mellitus management. Pharmacological research has found that cornelian cherry fruit (*Corni fructus*, *Cornus mas* L., Cornaceae) exhibits a variety of activities such as anti-inflammatory, antioxidative, antidiabetic, anticancer, antimicrobial, and due to these attributes take part in the prevention or treatment of diarrhea, inflammatory bowel disease, kidney disorders and atherosclerosis associated with dysregulated blood glucose and lipid profiles. In line with this evidence, phenolic compounds composition, *in vitro* antioxidant and hypoglycemic activities of dry hydroethanolic extract, prepared from fresh cornelian cherry fruits collected in Montenegro, were analyzed. Valuable total phenolics (17.18 mg GAE/g), total flavonoids (29.69 mg QE/g) and total anthocyanins (2.22 mg CGE/g) content were determined spectrophotometrically. Based on HPLC analysis of the extract, the main secondary metabolites were anthocyanins (cyanidin-3-galactoside 0.29 mg/g), phenolic acids (gallic acid 1.92 mg/g, protocatechuic acid 0.25 mg/g, chlorogenic acid 0.21 mg/g, *p*-hydroxybenzoic acid 0.08 mg/g, ellagic acid 0.14 mg/g) and flavonols (quercetin-3-glucopyranoside 0.28 mg/g, kaempferol-3-glucoside 0.07 mg/g, quercetin 0.02 mg/g). Furthermore, notable antioxidant abilities, evaluated by DPPH (IC_{50} 155.70 μg/mL), ABTS (IC_{50} 53.73 μg/mL) and FRAP (0.82 mmol Fe^{2+}/g) assays, were revealed. The investigated extract exhibited significant inhibition of *α*-amylase (IC_{50} 260 μg/mL) and particularly strong inhibition of *α*-glucosidase (IC_{50} 2.80 μg/mL), gastrointestinal enzymes involved in carbohydrates digestion and control of blood glucose levels. Obtained results of chemical analysis and demonstrated antioxidant and hypoglycemic activities showed that cornelian cherry fruit extract represents a herbal preparation with potential use in diet therapy or phytotherapy for a mild form of diabetes.

Keywords: Cornus mas, phenolics, antioxidant, α-glucosidase, diabetes

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