BIOCHEMICAL STUDIES ON SOME MEDICINAL PLANTS IN EGYPT AND SOUTH AFRICA

By

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ABSTRACT

Diabetes mellitus is the most common metabolic disorders with severe impact on quality of life. Reducing serum glucose levels and normalization of serum lipid is of great clinical importance for treating diabetes. The present study aimed to evaluate the biological and biochemical effects of diabetic rats fed on extract plants (chicory, Jerusalem artichoke and *Aloe vera*). The methods proximate analysis, Identification of phenolic and flavonoid compounds of ethanol extract and plants were carried out by HPLC of plants. Antimicrobial activity, determination of serum glucose, total lipids , total protein, total cholesterol and triglycerides LDL, HDL. Liver and kidney function, in diabetic rats were determined, Also, antimicrobial activity was estimated in plant extracts by different solvent. Results indicated that extract plants (chicory, Jerusalem artichoke and *Aloe vera*) of the proximate analysis revealed that crude protein were13.55, 9.31and 9.56%, respectively. Total carbohydrates were 66.66, 77.91and 56.52% respectively. Crude fiber contents were 2.83, 7.81 and11.1%, respectively. The results showed the relative percentage of as major components, both polyphenols and flavonoids contents were relatively high in ethanol extract. Chicory contained relatively high amount of catechein, pyrogallol, salycilic and benzoic, while Jerusalem artichoke had high content of catechein and catechol. *Aloe vera* contained high amounts of chlorogenic and benzoic The degree of solubility of elements in ethanol extract were compared with dried plants, however these extracts still had high antioxidants and biological activities. The preliminary disk assay of the studied plants had the ethanolic extract the most significant antimicrobial activity, followed by hexane extract, chloroform extract, ethyl acetate extract, acetone extract, and aqueous extract. A significant decrease in serum glucose, total lipids, triglycerides, total cholesterol, low-density lipoprotein, High-density lipoprotein , protein, albumin, globulin, uric acid, urea, creatinine and liver total lipid, triglycerides and total cholesterol, while increase in Aspartate aminotransferase, Alanine aminotransferase were attained in diabetic rats given ethanol extracts than in diabetic rats compared with diabetic control. Rats of diabetic control lost their body weight at higher rate compared with rats given 300, 350and 500mg/kg ethanol extract orally. The best increeas500mg/kg in ethanol extract of plants No significant increase in liver, kidney, brain, heart and spleen weight either in rats on their extracts when compared with diabetic control or normal control. Generally, chicory, Jerusalem artichoke and *Aloe vera* plants can be used by diabetic patients to decrease complications of diabetes in reducing serum glucose level.

Keywords: Chicory, Jerusalem artichoke and *Aloe vera*, Proximate analysis, HPLC, Antioxidant, Antimicrobial, Diabetes.