

## (ملخص البحث الاول)

African J. Biol. Sci., 16 (1): 297-306 (2020)

ISSN 1687-4870

[www.ajbs.journals.ekb.eg](http://www.ajbs.journals.ekb.eg)

[aasdjournal@yahoo.com](mailto:aasdjournal@yahoo.com)

e- ISSN 2314-5501 (online)

E.mail:

Effect of sweet chestnut (*Castanea sativa*) in streptozotocin induced diabetic rats

Dalia R. Hassan\* and Salem A. Salem

Department of Home Economic, Faculty of Specific Education, Fayoum – University

\*[dr.dal.refaat@gmail.com](mailto:dr.dal.refaat@gmail.com)

Received: Nov. 18, 2020; Accepted: Dec. 21, 2020; Available online: Dec. 27, 2020

### ABSTRACT

Diabetic chronic hyperglycemia is connected with organ deterioration, malfunction, and failure, including the kidneys. The current study explores the positive effects of chestnut (*Castanea sativa*) therapy on oxidative stress and renal function in streptozotocin "STZ" induced diabetic rats, as well as assesses the sensory properties of baked cookies containing varying doses of chestnuts. Thirty-five rats were used in this study and were divided into the following 5; group (1) or (-ve control) provided a baseline diet, and the remaining were injected with streptozotocin "STZ" and fed experimental diets for four weeks after the diabetes mellitus "DM" was confirmed. Group (2) or (+ve control) includes DM-rats without treatment; groups (3,4 & 5) DM-rats treated with 5, 10 and 15% CS, respectively. At the ending period, samples of blood were collected for measuring levels of blood glucose, serum HB1C, uric acid, creatinine and urea levels, malondialdehyde, superoxide dismutase "SOD", and glutathione levels "GSH", Results indicated that STZ induced diabetic rats (DM-positive) showed highly significant ( $P < 0.01$ ) increase in their blood glucose, MDA, serum urea, serum creatinine, and serum uric acid and a highly significant decrease ( $P < 0.01$ ) in GSH and SOD levels. DM rats fed CS had a significant decrease in their serum blood glucose, MDA, creatinine, and uric acid and an increase in GSH and SOD levels. Therefore, CS can be used in controlling diabetes and its harmful consequences and to enhance the antioxidant status and renal protective effects in diabetic rats. Also, Sensory evaluation results revealed that cookies prepared with CS at 5%, 10%, and 15 % were accepted by panellists with different ratings.

**Keywords:** Sweet chestnut, *Castanea sativa*, diabetic rats, Phenolic compounds.