

Plasma glucose in *Telfairia occidentalis* treated rats

W. A. Adisa¹, H. O. Otamere¹, C. U. Osifo¹, A. P. Ediangbe², P. A. Ogarah¹ and T. O. Aigbogun¹

¹Department of Physiology, Ambrose Alli University, Ekpoma, Edo State, Nigeria

²Department of Medical Laboratory Science (Chemical Pathology Unit), College of Medicine, Ambrose Alli University, Ekpoma, Nigeria

ABSTRACT

Telfairia occidentalis is a green vegetable popularly consumed among the native of Africa and it's generally believed to be of medicinal value. In this study, a total of 14 adult rats weighing between 150 to 200g were procured and divided into two groups A and B. Group A (control) was fed with normal rat diet (standard chow), while group B (test) was fed with *Telfairia occidentalis* diet (a mixture of normal feed plus 13% by weight *Telfairia occidentalis* leaves) for a period of 30 days. The result showed a statistical significant increase ($p < 0.05$) in the plasma glucose level of the test group compared to the control. This study suggests therefore that *Telfairia occidentalis* increases the plasma level of glucose and would not be fit for consumption by diabetic patients.

Keywords: *Telfairia occidentalis*, rats, hyperglycaemia, blood glucose.

INTRODUCTION

Telfairia occidentalis is tropical vine grown in West Africa as a leaf vegetable and for its edible seeds. *Telfairia occidentalis* contains nutrients such as proteins, carbohydrates, vitamins, minerals and fibres [1]. It also contains oxalates, saponin, glycosides, flavonoids, alkaloids and resins [2]; [3]. Aqueous extract of this plant is reported to increase haematological parameters [4]. Similarly it has been shown to be hepaprotective against garlic induced oxidative stress [5] while its ethanolic extract have demonstrated hypoglycaemic properties both in normoglycaemic and alloxan-induced diabetic rat [6]. Freshly prepared *Telfairia occidentalis* mixture containing *Telfairia occidentalis* fluid, raw content of egg and peak evaporated unsweetened milk administered orally is a popular haematinic regimen used to combat anaemia in pregnant women in mission hospital in Nigeria [7]. The root and leaves have been shown to contain high toxic alkaloids and saponins [3]. In folkloric medicine, the fresh leaves are used in the treatment of anaemia, sudden attack of malaria and convulsion [8];[4]. In view of the medicinal potential of *Telfairia occidentalis*, this study therefore is aimed at investigating the effect of *Telfairia occidentalis* on plasma glucose in rats.

MATERIALS AND METHODS

Plant material: Fresh leaves of *Telfaria occidentalis* were obtained from Ekpoma main market after which the leaves were taken to the herbarium unit of Ambrose Alli University, Ekpoma for identification and authentication. The leaves were sun dried, grounded; and then mixed with standard chow in such a way that the mixture is composed of 13% by weight of the leaves.

Experimental Animals: A total of 14 male rats weighing between 150 to 200 g were used for this study. The rats were divided into two groups; control and test groups housed in cages at room temperature (23°-27°C) and left in the animal house for two weeks prior to the commencement of the study. This was done to enable the animals get adjusted to their new environment. The control group was fed with rat feeds while the test group was fed with rat feeds mixed with *Telfaria occidentalis* for 30 days. Fresh water was made available to the two groups *ad libitum*.

Blood sample collection/plasma glucose test: The blood collection was done through the tails of the animals at weekly intervals from the two groups of rats. The collected blood samples were kept in heparinised tubes to prevent blood clotting while the fasting blood glucose level test were carried out using the One Touch Glucometer (Lifescan, U.S.A.) as described by [9].

Statistical analysis: Results were expressed as mean $\pm$ S.D. The significance of difference between means were determined by the students t-test and results were regarded as significant at $p < 0.05$.

RESULTS

The result is as soon in table 1 and figure 1; the plasma glucose level is measured in mg/dl. From the table it is shown that there is increase in plasma glucose level in the test group compared to the control for each of the four weeks in consideration. However the increment observed in week 2 were not statistically significant ($p < 0.05$), but for week 1, week 3 and week 4; there were statistical significant increase ($p < 0.05$) in the plasma glucose levels of the test group compared to the control.

Table 1: Effect of *Telfaria occidentalis* on plasma glucose in rats (n = 14)

	Control	Test
Week 1	80 $\pm$ 2.13	96 $\pm$ 4.31*
Week 2	77 $\pm$ 3.65	85.5 $\pm$ 2.50
Week 3	81 $\pm$ 1.39	101 $\pm$ 3.22*
Week 4	78 $\pm$ 2.82	92 $\pm$ 4.61*

*: $p < 0.05$

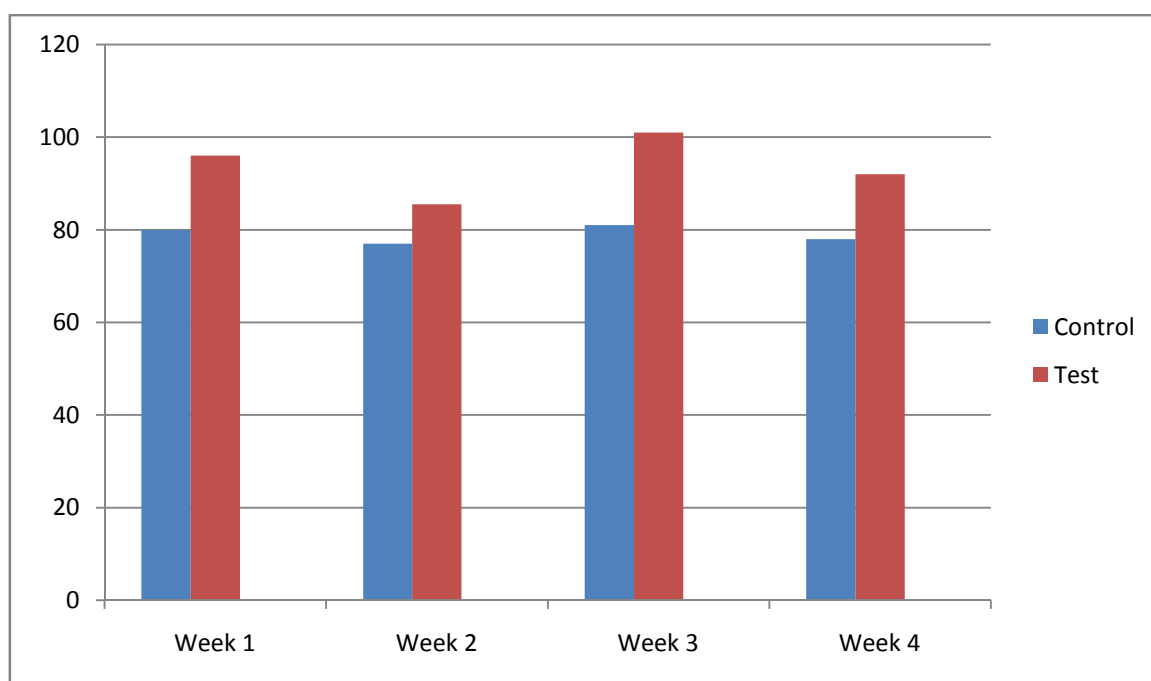


Figure 1. Showing effect of *Telfaria occidentalis* on plasma glucose in rats

DISCUSSION

The findings of this study is contrary to the reports of other researchers; Emudianughe and [10] reported that *Telfairia occidentalis* aqueous leave extract produce a gradual but significant reduction in blood glucose in streptozotocin treated hyperglycaemic rats and presumed its mechanism of action to be similar to that of begunides and metformin. [9], reported a significant reduction in blood glucose following simultaneous administration of glucose with the ethanolic leaf extract of *Telfairia occidentalis*.

It is important to note that the disparity of our findings from other researchers finding may be attributed to the difference in methodology and in the preparation of the plant material used in this study. This study did not investigate the mechanisms of action involved as regards the activities of *Telfairia occidentalis* on plasma glucose.

However, it is suggested that hyperglycaemic effect of *Telfairia occidentalis* reported in this study may be due to its ability to either promote glucogenesis or gluconeogenesis.

In conclusion, the findings of this study does not suggest that *Telfairia occidentalis* leaves reduces plasma glucose level.

REFERENCES

- [1] Fasuyi, A.O., **2006**. *Afr. J. Biotechnol.*, 5: 49-53.
- [2] Tindal, H.D., **1968**. Commercial Vegetable Growing. Oxford Press, London, pp: 69.
- [3] Akubue P.L., **1980**. *Planta Med.*, 38: 339-343.
- [4] Alada, A.R.A., **2000**. *Afr. J. Biomed.Res.*, 3: 185-186.
- [5] Olorunfemi A. E., Arnold C. I., Emmanuel O., Nkaima, N., Akeem A., **2005**: *J. Pharm. Biores.*, 2: 36-42.
- [6] Nwozo S.O., Adaramoye O.A., Ajaiyeoba E.O., **2004**. *Niger. J. Nat. Prod. Med.*, 8: 45-47.
- [7] Olaniyan M.F., Adeleke A., **2005**. *Afr. J. Trad. Cam.*, 3:269-273.
- [8] Gbile, Z.O., **1986**. Ethnobotany, Taxonomy and Conservation of Medicinal plant. In: Sofowora, A.O. (Ed.), The State of Medicinal Plant Research in Nigeria. pp: 19.
- [9] Olorunfemi Eseyin, Patrick Ebong, Eyong Eyong, Oladoja Awofisayo and Akeem Agboke, **2010**. *African Journal of Pharmacy and Pharmacology*, 4(6): 368-372.
- [10] Emudianughe T.S., and Aderibigbe A.O., **2002**. *West Afri. J. Pharmacol. Drug Res.*, 18 (1 & 2): 14-16.