The Effect of the Aqueous Extract of *Telfairia occidentalis* (Pumpkin) Leaf on the Haematological Parameters of Albino Rats

Michael Grätzel, Ecole Polytechnique Fédérale de Lausanne, Switzerland

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ABSTRACT— ***The effects of the aqueous extract of Telfairia Occidentalis leaves on the haematological parameters of Albino rats were investigated. A total of 36 rats were used for the study which lasted for eight weeks. The rats were shared into three treatments (A B C) with three replicates per treatment. Each treatment had 12 rats and four rats per replicate. Group A was the control and were given only distil water. Those in group B were administered with 2.0ml extract per day while those in group C were given 4.0ml extract per day for up to eight weeks of the study. Results revealed that there were significant differences (P<0.05) in haematological parameters of rats administered with the extract when compared with the control. There was also a decrease in glucose level of experimental rats when compared with that of the control.***

Keywords--- *Telfairia occidentalis*, Albino rats, Haematological, Extract

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INTRODUCTION

Telairia Occidentalis (Pumpkin) is a tropical vine grown in West Africa and a leaf vegetable. The leaves and seeds are the edible parts of the plant and are used in every day meals by incorporation into soup and stews (Hamlin and Latunde, 2011). It is also known for its medicinal value Kayode and Kayode (2010). Common names of the plant include: fluted gourd, fluted pumpkin and ugu. The plant is deciduous, perennial and drought tolerant. It is a creeping vegetable shrub that spread low across the ground with large lobed twisting tendrils (Oboh, 2005). It contains nutrients such as proteins, carbohydrates, vitamins minerals and fibre (Fasuyi, 2006). Idris (2011), showed its proximate composition in mg/100g dry matter to be 87.00 moisture content, 17.20 Ash, 8.72 Crude proteins, 14.27 Crude lipids, 20.17 Crude fibre and 290.16 kcal/100g caloric value. The herbal preparation of the plant has been employed in the treatment of sudden attack of convulsion, malaria and anaemia (Gbile, 1986).

Unsweetened milk administered orally is a popular haematinic regimen used to combat anaemia in pregnant women of mission hospitals in Nigeria (Olaniyan 2005). The young leaves sliced and mixed with coconut water and salt are stored in bottles and used for the treatment of convulsion in ethno-medicine (Gbile 1986). The leaf extract is useful in the management of cholesterolemia, liver problem and impaired immune systems (Oboh, 2005). The effect of some plants extract on the haematological parameters of rats has also been studied. For example, Saliu *et al* (2012) studied the effect of some leafy vegetable diets on the haematological parameters of streptozotocin-induced diabetic rats and they found out that there was significant increase ($P<0.05$) in the packed cell volume, Haemoglobin, white blood cell, red blood cell platelets and neutophils count of the rats fed with vegetables than the control. Oyeyemi *et al* (2008) investigated the effect of the aqueous extract of *Telfairia occidentalis* leaves on the testis and spermatozoa characteristics in male Albino Rat (wistar strain) and found that it caused a significant increase ($P<0.05$) in the levels of packed cell volume, haemoglobin and erythrocytes. This leaf is used extensively by many people in Nigeria who recommends it as blood tonic. This however, has not been ascertained scientifically. Therefore, it is necessary to investigate its effect on the haematological parameters of albino rats.

2.MATERIALS AND METHODS

Thirty six (36) albino rats of approximately equal weights were obtained from veterinary Department of National Institute for Trypanosomiasis and Onchocerciasis Research Kaduna. The rats were randomly distributed into three experimental groups with three replicates per treatment. There were 12 rats in each group and four rats per replicate. Fresh leaves of Pumpkin "ugu" were shade dried to a constant weight and the dry leaves were grinded to form powder. 500g of the powder was soaked in five litres of distill water for forty-eight hours (48hrs). The mixture was sieved and the filtrate was evaporated in a water bath to dryness to obtain a solid extract. The extract was finally dissolved in the same quantity of normal saline water for further use.

Group A was the control and the rats in it were given only the normal saline water with no dissolved solutes. Group B was given 2.0ml/day of liquid extract via oral route for sixty days while group C was given 4.0ml/day for the same period. The haematological parameters were determined as follows: Blood samples were collected and centrifuged using the Haematocrift centrifuge for five minutes and the packed cell volume (PCV) was measured with Haematocrift reader. The concentration was measured using the cyano-methaemoglobin. Haemocytometer was used to determine the RBC and WBC. Blood glucose was determined by the glucose oxidase method using glucometer. All the values obtained were subjected to statistical analysis.

3.RESULTS

The results of the effect of aqueous extract of *Telfairia Occidentalis* leaves on RBC, WBC, HB, PCV and glucose level of albino rat is given in table 1. The 7.4 ± 0.14 value of RBC of rats administered with 2.0ml extract was significantly higher ($P<0.05$) than the value of 6.9 ± 0.15 observed in the control experiment. This represents 7.3% increase in RBC. Also there was 8.3 ± 0.19 value for 4.0ml extract per day which represents 20.3% increase over the control. The WBC value of 10.2 ± 0.17 and 11.3 ± 0.19 for the 2.0ml per day and 4.0ml per day represents 64.5% and 82.3% increase respectively. This was also significantly higher ($P<0.05$). The haemoglobin count also followed the same pattern since the values of 14.6 ± 0.16 for 2.0ml per day increased to 15.4 ± 0.20 for 4.0ml per day which represent 62.0% and 79.4% increase respectively. The PCV of rats treated with *Telfairia occidentalis* extract increase from 44.6 ± 2.6 for 2.0ml per day to 49.0 ± 1.6 for 4.0ml per day. This represents 22.6% and 35.0% respectively and this is significantly higher ($P<0.05$) when compared with the control. The blood glucose level however, dropped from 4.7 ± 0.2 to 4.1 ± 0.3 for 2.0ml per day and 4.0ml per day when compared with the value of 5.1 ± 0.5 observed in the control. This represents 7.8% and 19.6% reduction.

4. DISCUSSION

The increase in the haematological parameters seen in this study is consistent with the observation made by Alada (2000) when rats were fed with the air dried leaves of *Telfairia Occidentalis.* This may be due to the rich nutrient composition of the plant. Fasuyi (2006) observed that *Telfairia occidentalis* is rich in protein, fat, vitamin C and mineral such as Zinc, Iron, Calcium and Magnesium. Because of its richness in amino acids like lysine, methionine glutamine and histidine, it is a good haemopoietic factors that has direct influences on the production of blood (Ganong 2005). The leaf extract is useful in the management of cholesterolemia, liver problem and impaired immune systems (Oboh, 2005). These factors explain the reason for increase in blood parameters of albino rats with increase concentration of *Telfairia occidentalis*. The increase in the blood parameters is also an indication that plant leaves and other by-products could serve as feed supplements in the non- ruminant diets. This is in agreement with the work of Apata and Babalola (2012). The significant reduction in blood glucose level is due to the fact that vegetable plant possesses hypoglycaemic properties as observed by Abusharka (1994) and Olajide (1999). Hence it can be concluded that *Telfairia Occidentalis* is a blood tonic.

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Table 1: Effect of Aqueous Extract of *Telfairia Occidentalis* Leaves on Blood Parameters of Albino Rat

Group	RBC($x10^{12}$)	WBC (10^9)	Hob(g/L)	PCV	Glucose
Control	6.9 ± 0.15^c	6.3 ± 0.15^c	12.1 ± 0.20^c	36.3 ± 1.5^c	5.1 ± 0.50^a
2.0mls/day	7.4 ± 0.14^b	10.2 ± 0.17^b	14.6 ± 0.16^b	44.6 ± 2.6^b	4.7 ± 0.20^b
4.0mls/day	8.3 ± 0.19^a	11.3 ± 0.19^a	15.4 ± 0.20^a	49.0 ± 1.6^a	4.1 ± 0.30^c