

Short communication

## THE HAEMATOLOGICAL EFFECT OF *TELFERIA* OCCIDENTALS DIET PREPARATION

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The effects of diet preparation of *Telfaria occidentalis* on some haematological indices were carried out on male albino rats. The animals were fed for 4 weeks on diets specially composed to contain 25%, 50% and 57% by weight of the leaf of *Telfaria occidentalis*. The diet preparations produced a dose-dependent increases in all the measured haematological indices (packed cell volume, haemoglobin concentration red and white blood cell counts). The results confirm the claim that *Telfaria occidentalis* can be used to cure anaemia.

Key Words: *Telfaria Occidentalis*, Packed Cell Volume, haemoglobin, red blood cell, white Blood cell.

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*Telfaria occidentalis* (family Cucurbitaceae) is a herbal plant found along the fringes of the closed forest in Africa and particularly cultivated from Sierra Leone to Southern Nigeria among other areas (Burkett, 1968). The leaves and the young shoots of the plant are frequently eaten as a potherb (Tindall, 1968. Okigbo 1977, Okoli and Mgbeogu, 1983). The seeds of the plant are also popular item of diet and are cooked whole and ground up into soups. The root and leaves have been shown to contain highly toxic alkaloids and saponins (Akubue et al, 1990). The leaves also contain protein, vitamins, and flavours (Tindal, 1968; Gbile, 1986).

In Nigeria, the herbal preparation of the plant has been employed in the treatment of sudden attack of convulsion, malaria and anaemia (Gbile, 1986). Despite its widespread usage as food and medication, information on the biological activity of the plant is very scanty.

Based on its traditional use as a haematinic, this work was therefore undertaken to investigate the effect of diet preparation of *T. occidentalis* on some haematological indices: Packed Cell volume (PCV), haemoglobin concentration (HB Conc.) red blood cell count (RBC – count) and white blood cell count (WBC count) using rat as a model.

### MATERIALS AND METHODS

#### Animals

Male albino rats of the Wistar strain (250 – 300g) were used. The rats were divided into four groups (10 rats per group). Group 1 rats were fed standard rat diet (Ladokun feeds, Ibadan, Nigeria), and saved as the control while other groups (II, III, and IV) were fed on diets containing 25%, 50% and 75% by weight of *T. occidentalis* leaf respectively for 4 weeks. Tap water was given *ad libitum*.

#### Preparation of *T. occidentalis*/rat diet mixture.

The leaves of *T. occidentalis* (Fluted pumpkin) were purchased from a market in Ilorin, Nigeria. They were authenticated by staff in the herbarium of department of Biological Sciences, University of Ilorin, Nigeria. The leaves were chopped, dried and then milled into a fine powder. The standard rat diet was similarly milled. The two were then mixed in such a way as to contain 25%, 50% and 75% by weight of *T. occidentalis* for groups II, III, IV respectively.

#### Haematological Tests

Four weeks after the onset of the feeding, blood sample were obtained from the tails of the animals for the determination of blood parameters under investigations: packed cell volume (PCV) haemoglobin concentration (Hb Conc), red blood cell count (RBC count) and white blood cell count (WBC count). Packed cell volume (PCV) was measured by the microhaematocrit centrifuge and spinning for 5min. at 12, 000xg before reading with the haematocrit reader. Heparinized capillary tubes were supplied by British Drug House (BDH). Haemoglobin levels were measured by the cyanmethaemoglobin method using a CE4304 colorimeter (Cecil Instruments). The red and white blood cell counts were done using the haemocytometer method.

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### Statistical Analysis

Results were expressed as mean  $\pm$  S.E.M. The significance of difference between means was determined by the students t-test and results were regarded as significant at  $P < 0.05$ .

## RESULTS

The results of the effects of diet preparation of *T. occidentalis* on haematological indices of PCV, Hb. Concentration, RBC count and WBC count are shown in table 1. Consumption of the different preparations of the leaves of *T. occidentalis* by rats caused significant increases in the PCV, Hb conc. RBC count and WBC count, with rats in group IV showing the most significant responses to the diet, that is, both the PCV and Hb count increased by about 50% while the RBC count WBC increased by about 90% and 25% respectively. There is a progressive increase in the blood indices as the concentrations of *T. Occidentalis* in the diet increased from 25% to 75%. The WBC count increases, however, are significant only in groups III and IV.

**Table 1**  
**Effects of *T. occidentalis* diet preparations on some haematological indices in the Rat. (n = 10)**

Group	Treatment	PCV (%)	Hb Conc.(g/dl)	RBC Count X $10^6$ /mm <sup>3</sup>	WBC Count X $10^3$ /mm <sup>3</sup>
I	Control	40.60 $\pm$ 0.12	12.55 $\pm$ 0.71	8.21 $\pm$ 0.14	15.10 $\pm$ 0.18
II	25% Prep.	45.51 $\pm$ 0.31*	15.07 $\pm$ 0.78*	10.11 $\pm$ 0.32*	16.31 $\pm$ 0.24
III	50% Prep.	55.03 $\pm$ 0.41**	16.30 $\pm$ 0.2*	11.34 $\pm$ 0.34**	17.80 $\pm$ 0.38*
IV	75% Prep.	59.04 $\pm$ 0.19**	18.82 $\pm$ 0.03**	13.91 $\pm$ 0.64**	19.25 $\pm$ 0.81**

\*- $P < 0.05$ , \*\*- $P < 0.01$ .

## DISCUSSION

The results of this study established the haematological activity of the leaves of *T. occidentalis* in the rat. The diet preparation of the leaves of the plant increases significantly the PCV, Hb conc. and RBC count. It also produced significant increase in the WBC count. The increases in the blood indices could be related to the chemical composition of the leaves of *T. occidentalis*. According to Tindall (1968) the chemical composition of the *T. occidentalis* includes protein, fat, carbohydrate, calcium iron, vitamin A, thiamine, riboflavin and nicotinamide. Most of these constituents are well-known haematological factors that have direct influence on the production of blood from the bone marrow (Ganong, 1997). For instance, iron is a well-established haemopoetic factor and deficiency of it produces anaemia.

The present study therefore supports the claim of the local people that *T. occidentalis* is a blood tonic and could be used to cure anaemia.

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Received: September 1998

Revised version accepted: August 1999