

**Short communication**  
**EFFECT OF CHRONIC GARLIC FEEDING ON SOME HAEMATOLOGICAL PARAMETERS**

**IRANLOYE B. O.**

*Department of Physiology and Biochemistry, Faculty of Health Sciences,  
University of Ilorin. Ilorin, Nigeria*

Some hematological parameter were investigated in rats fed with garlic juice (200mg/kg) daily for thirty days. Garlic feeding for 30 days significantly ( $P < 0.05$ ) increased the red cell count, haemoglobin concentration and the PCV when compared with the control. Also garlic fed rat showed a significant increase in total white blood count, neutrophils, monocytes and the lymphocytes. No significant changes were observed in the basophil and eosinophil counts of animal fed with garlic, when compared with control.

**Key words:** Garlic, Haemoglobin indices

### INTRODUCTION

The virtues of Garlic (*Allium Sativum*), as a medicinal plant are known to most cultures of the world. It has many local names, in Nigeria, it is ayo in Iboland, ayuu in Yorubaland and tafemuwa in Hausa land. (Gill, 1992)

Garlic has been shown to have several effects in the body. This includes inhibition of platelet aggregation (Apitz-Castro et al, 1983), reduction of arterial blood pressure (McMahon and Vargas, 1993) and prevention of fat infiltration of the liver (Sand et al, 1995). Extracts of garlic has also been shown to improve the activation of natural killer cells as well as the level of interleukin-2 (Tang et al, 1997).

There appears to be a dearth of information on the effects of garlic consumption on blood cells, hence the present study.

### MATERIAL AND METHOD

**Preparation of Garlic Juice:** Garlic juice was extracted using distilled water as the solvent as described by Jain et al 1973.

**Animals:** Male albino rats weighing between 150-240g were used in the experiment. The rats were divided into two groups of 8 rats each (the control and garlic fed group) and kept in separate cages. The rats in both cages were fed with normal rat diet and given water *ad libitum*. In addition the garlic fed rats were given garlic juice 200mg/kg daily for 30 days while the other group were given equal volume of 0.9% normal saline and serve as the control. At the end 30 days, the rats were sacrificed and blood samples collected into heparinized tubes for hematological studies.

**Determination of Blood parameters:** The red and white blood cell counts and Hb were determined using standard methods described by Dacie & Lawis 1984). PCV was determined using Hawksley microcapillary tubes and centrifuge at 1,100g for 5 minutes (Abudu & Sofola 1994).

### RESULTS

The mean values of the red blood cell count, the white blood cell count the haemoglobin concentration and the PCV in normal and garlic fed rats are shown in Table 1.

**TABLE 1: COMPARISM OF THE HEMATOLOGICAL INDICES IN CONTROL AND GARLIC FED RATS.**

Group	PCV	Hb	RBC	WBC	N	E	B	L	M (%)
Control	38 ± 1.53	11.4 ± 0.02	8.263 ± 0.32	7.063 ± 0.044	30.3 ± .00	2.67 ± .66	0.6 ± .58	6.03 ± 1.20	2.0 ± 0.44
Garlic fed	40.3 ± 1.2	12.91 ± 0.5	8.856 ± 0.32	11.443 ± 0.044	34.0 ± 1.45	2.67 ± 0.88	0.33 ± 0.33	69.0 ± 1.53	2.83 ± 0.87

*P < 0.05 compared with control*

*L = Lymphocytes, N = Neutrophil, E = Eosinophil, B = Basophil, WBC = Total white blood cell count (X 1000/ml), RBC = Total red blood cell count (X million/ml), Hb. = heamoglobin concentration (g%), P. C. V. = Packed Cell Volume (%). All values are expressed in Mean ± SEM of 10 animals.*

The garlic fed group of rats showed a significant increase in RBC and total Hb concentration as compared to the control. There is also a significant increase in PCV of garlic treated groups compared to the control. The total white blood count (WBC) shows a significant increase with garlic treatment. The neutrophil lymphocytes and the monocytes in garlic fed rats were significantly higher than the control.

Basophils counts in garlic fed did not differ significantly from the control; while the eosinophil count showed no significant change when compared with the control.

## **DISCUSSION**

This study has shown that daily feeding of rats with 200mg/kg garlic juice slightly increases the haemoglobin concentration, the red cell count and the packed cell volume (PCV). A contrary report was given by Harenberg (1988) when he reported a reduction in PCV from his own study.

According to Song *et al* (1987), garlic extract is an active oxygen scavenger. It is thus possible that garlic components competes with Hb in the RBC for oxygen resulting in hypoxia which then stimulates Hb synthesis and RBC production.

It is also possible that the end product of garlic metabolism in the body stimulates the kidney directly to cause formation and secretion of erythropoetin. Research work is currently going on in this laboratory to determine the effect of garlic on erythropoetin level (a potent stimulator of the bone marrow).

Leucocytes are known to increase sharply when infection occurs, as one of the first line of defense of the body (Ganong 2001). The increase in total white blood cell count, neutrophils, lymphocytes and monocytes counts following garlic feeding for 30 days confirms the antiinfection properties of garlic.

This treatment is in agreement with earlier work by Tang *et al* 1997 who showed that treatment with garlic extract improve the activation of natural killer cells T-lymphocytes and also that of Sumiyoshi (1997) who showed that garlic extract stimulates immune functions.

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*Received: June 2000*

*Accepted in final form: September 2001*