

## Abstract

### **EFFECT OF FRESH AQUEOUS GARLIC EXTRACT (*ALLIUM SATIVUM* L.) ON ERYTHROPOIESIS IN ADULT MALE RABBITS: A STUDY ON PERIPHERAL BLOOD ANALYSIS**

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Garlic (*Allium sativum* L.) is a cultivated plant. Its wild progenitor originated in the high planes of West-Central Asia. It has been widely used as food and medicine. Its effects have been demonstrated in both animals and humans. Garlic has been the subject of intensive scientific research, nonetheless, little research has been done on garlic with regard to its action on specific blood cells. The present study examined the effect of freshly prepared Aqueous Garlic Extract (AGE) on the process of Erythropoiesis (Red blood cell formation) in peripheral circulation in rabbits for a period of 30 days. The aim of the study was to determine whether garlic's active compounds have any erythropoietic effect in rabbits in vivo. It was also used to establish whether there is a dose-dependent relationship between garlic administered and erythropoiesis.

**Methods:** 30 out of 50 Adult Male New Zealand white rabbits were randomly selected and used for the study. Animals in the 5 experimental groups were orally fed on 5 different absolute concentrations of freshly prepared AGE as 26, 52, 104, 208 and 416mg/kg body weight of freshly prepared AGE respectively. Blood was withdrawn from the lateral ear vein of each animal every 7th day. Red blood cell count (RBC), Packed cell volume (PCV), Hemoglobin levels (Hb) and reticulocyte counts (Retics) were done to assess the effect of garlic on peripheral blood.

**Results:** Overall, the results suggest that the placebo did not affect the erythropoietic activity in the peripheral blood from animals in the control group, they therefore remained erythropoietically normal. There was much statistical significant difference in the analyzed peripheral blood parameters between the control group and the 5 experimental groups. There was an increase in the erythropoietic activity in experimental groups 4 and 5 (71.4%,  $p < 0.05$ ) as compared to groups 1 and 2 (33.3%,  $p < 0.01$ ) and consequently the control group as microscopically seen from the peripheral blood parameters (RBC and Retics). Conversely, dependent on the dosage, AGE seemed to have an influence in each experimental group, thereby eliciting sigmoid (S-shaped) dose-response curves for PCV and Hb levels, and an exponential growth curves in RBC and reticulocyte counts between the groups.

**Conclusion:** From the study, these results indicated that freshly prepared AGE, or as used in its naturally occurring form (fresh garlic bulbs), has a positively significant effect on the process of erythropoiesis, for it accelerates the rate of reticulocyte production, which was used as an index for the increased rate of Red blood cell production.