

# **HAEMATOLOGICAL INDICES OF MALE ALBINO RATS GIVEN ORAL DOSES OF ENERGY 3000 HERBAL MIXTURE**

## **ABSTRACT**

The study aimed to investigate the effect of Energy 3000 herbal mixture on some haematological indices in male albino rats. The study was conducted using twenty male albino rats which were divided into four groups of five rats per group. Group 1 served as control and was given feed and water only. Groups 2 to 4 were administered 0.2, 0.4, 0.8ml/kg body weight (bw) of the herbal mixture. This treatment was done for 28days, after which blood samples were collected for the measurement of haematological indices. Results obtained were subjected to statistical analysis. The results obtained show that energy 3000 herbal mixture at the dose of 0.8ml/kg bw significantly ( $P < 0.05$ ) increased the WBC (from 5.0 to 10.0)  $10^9/L$ , Hb (from 11.7 to 12.2) g/dl and platelets (from 200.1 to 224.5)  $10^9/L$  when compared to the control. The result suggests that energy 3000 herbal mixture caused significant changes in haematological changes in haematological indices of male albino rats.

Key words: Energy 3000 herbal mixture, Herbal remedies, Haematological indices, male albino rats, erectile dysfunction.

## **INTRODUCTION**

People use different herbal medicines for the treatment of different ailments. One of the ailments that disturb mature adult male is erectile dysfunction (ED). Some men prefer to use herbal remedies for its treatment. One of such herbal remedies is Energy 3000 herbal mixture.

A penile erection which is enough for sexual satisfaction, as well as satisfactory sexual fulfillment, cannot be got and /or maintained in men with ED. Erectile dysfunction is defined as a disturbance of the arousal stage of the sexual response (Burnett et al, 2018). According to (Ariba et al; 2007), it is one of the most common sexual dysfunctions in men worldwide. Erectile dysfunction, low sperm production and inability to perform in sex are sources of embarrassment especially among the uneducated in underdeveloped and developing countries.

It is not uncommon for males to either not recognize that they have a sexual disorder, play down its significance or find it uncomfortable to discuss with their doctor. Thus only very few seek medical help (Priesto-casto et al, 2020). Most of the men suffering from any kind of penile dysfunction rather resort to herbal remedies. Energy 3000 herbal mixture is one of such herbal remedies commonly used to manage any kind of penile dysfunction and enhance sexual performance in Nekede, Imo State, Nigeria. Energy 3000 herbal mixture is made up of *Citrus aurantifolia* (Lime), *Psidium Guajava*, *Xylopia aethiopica*(Ethiopian pepper), *Sesomum indicum* Benner seed), *Magnifera indica* (mango see), Ginseng and water.

Herbal medicines are believed to be safe because they are from natural sources. However, literature has shown that some of these herbal medicines have adverse effects on some organs contrary to the organs of interest (Oyewo et al; 2013; Adeyemi and Akinwande, 2015; Patrick-Iwuanyanwu and Nkpaa, 2015).

Energy 3000 herbal mixture is a herbal drink that boost sperm production, increases sexual libido, fights weak erection and strengthens the male organ. However, there is dearth of information on haematological changes that may occur due to the administration of this herbal remedy. The purpose of the study was to ascertain the effects of the administration of graded doses of Energy 3000 herbal mixture on haematological indices in male albino rats.

## **Materials and Methods**

### **Collection and identification of materials**

Energy 3000 herbal mixture was purchased at Herbal medicine shop at Umuerim junction, Nekede, Owerri, Nigeria and was taken to the department of Biochemistry, Federal Polytechnic Nekede Owerri, Nigeria for identification.

### **Experimental Animals**

Twenty healthy male albino rats between eight to twelve weeks of age, weighing 150-200g were used for the study. They were purchased from Nano animals, Irete, Imo State, Nigeria. They were kept in rat cages. All the animals were allowed a period of seven days to acclimatize before the commencement of the treatment.

### **Animal treatment**

Twenty (20) male albino rats were assigned to four groups (n=5). The first group (Group 1) served as control and were given feed and water only. Group 2, 3 and 4 were given graded doses of energy 3000 herbal mixture (0.2, 0.4, and 0.8ml/kg body weight respectively). The treatments were given orally and once daily for 28 days.

### **Collection of blood samples**

On the 30th day, blood samples for analysis of haematological indices were collected in ethylene diamine tetraacetic acid (EDTA) bottles and taken for haematological analysis.

### **Haematological Investigations**

The packed cell volume (PCV), haemoglobin (Hb), Red Blood cell (RBC) count, white blood cell (WBC) count and platelets count were determined according to the method described by John and Arundhati, 2000.

### **Statistical analysis**

Results were presented as mean  $\pm$  standard deviation. One-way analysis of variance (ANOVA) was used to determine the differences between groups and where significance existed, Dunnett's post hoc test was employed to establish the source. Differences in means were considered significant at  $P < 0.05$ .

## Result

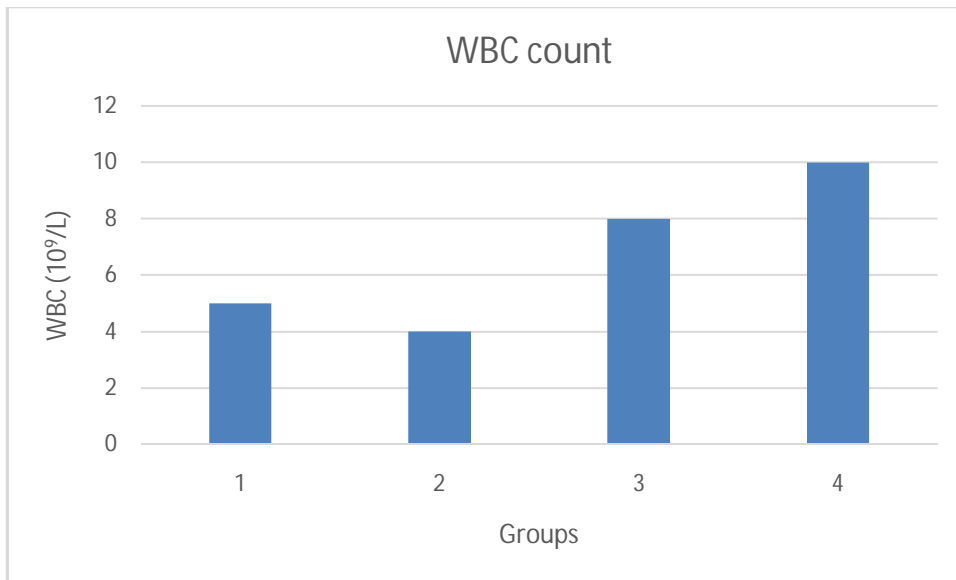
Table 1: Haematological indices of male albino rats given oral doses of energy 3000 herbal mixture.

Groups	Treatment (ml/kgbw)	WBC ( $10^9/L$ )	RBC ( $10^{12}/L$ )	HB (g/dl)	PCV (%)	PLT ( $10^9/L$ )
1 (control)	0.0	5.0 $\pm$ 0.00 <sup>b</sup>	5.2 $\pm$ 0.01 <sup>c</sup>	11.7 $\pm$ 0.00 <sup>9</sup>	42.4 $\pm$ 0.00 <sup>c</sup>	200.1 $\pm$ 0.14 <sup>a</sup>
2	0.2	4.0 $\pm$ 0.00 <sup>a</sup>	6.3 $\pm$ 0.00 <sup>d</sup>	12.1 $\pm$ 0.2.0 <sup>b</sup>	41.1 $\pm$ 0.15 <sup>b</sup>	217.2 $\pm$ 6.85 <sup>b</sup>
3	0.4	8.0 $\pm$ 0.00 <sup>c</sup>	4.2 $\pm$ 0.02 <sup>a</sup>	11.7 $\pm$ 0.00 <sup>a</sup>	40.4 $\pm$ 0.01 <sup>a</sup>	200.0 $\pm$ 0.00 <sup>a</sup>
4	0.8	10.0 $\pm$ 0.7 <sup>d</sup>	5.0 $\pm$ 0.01 <sup>b</sup>	12.2 $\pm$ 0.02 <sup>b</sup>	41.0 $\pm$ 0.00 <sup>b</sup>	224 $\pm$ 219 <sup>b</sup>

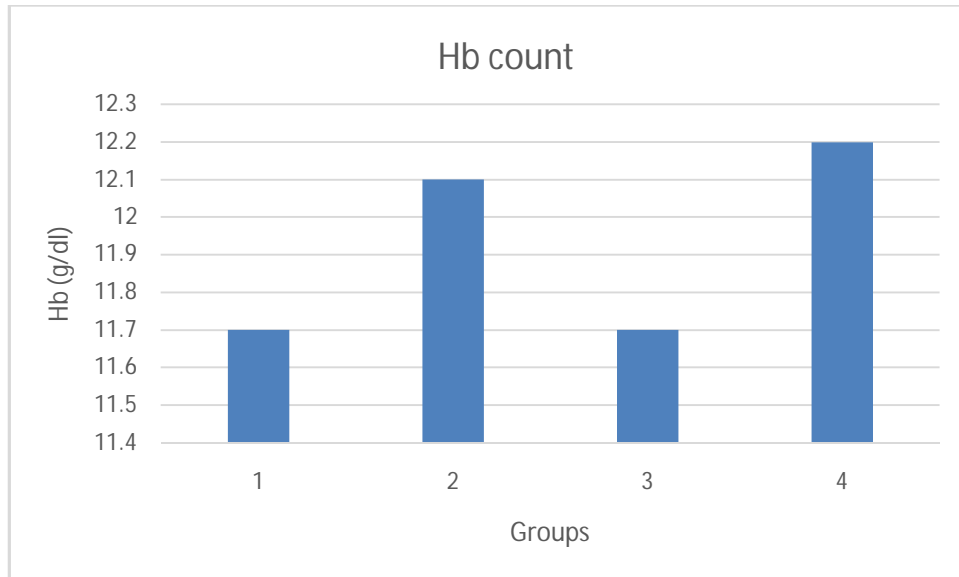
Values are given as mean  $\pm$  standard deviation

Values in the same column with different superscripts are significantly different (P<0.05).

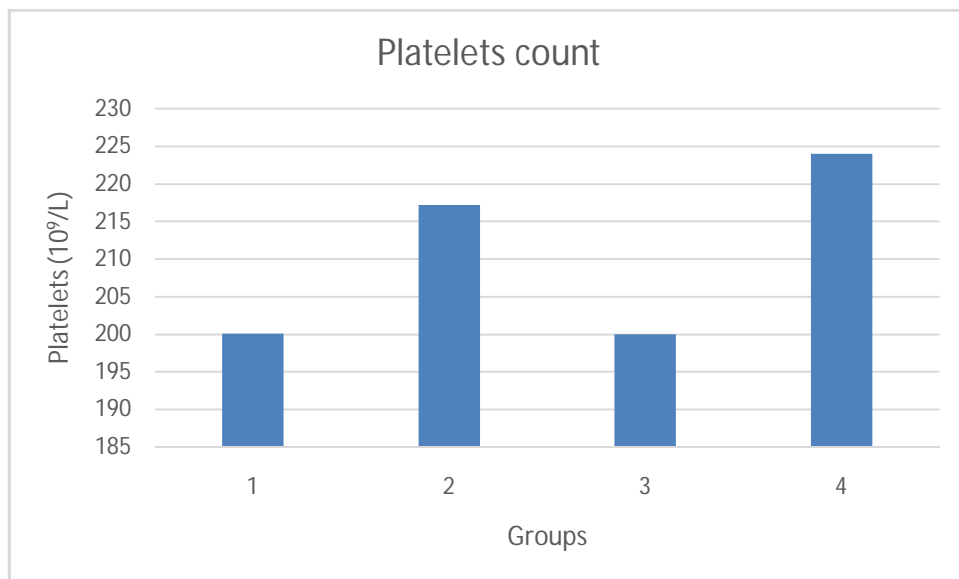
WBC count in male albino rats given oral doses of ENERGY 3000 Herbal mixture



Hb values in male albino rats given oral doses of ENERGY 3000 Herbal mixture



Platelets count in male albino rats given oral doses of ENERGY 3000 Herbal mixture



## Discussion

Haematological values are important indices used to evaluate the toxic capability of extracts from plants in living organisms (Sunmonu and Oloyede, 2010). They can also be useful in explaining blood-related functions of chemicals and extracts from plants. Such laboratory investigations are known to be highly sensitive, accurate and dependable and remain the basis of ethical and rational study, diagnosis of diseases, prevention and treatment of diseases. (Okonkwo et al, 2004).

Elevated levels of white blood cells (WBC) were seen in the albino rats after giving them oral doses of energy 3000 herbal mixture. The Increase was statistically significant ( $P < 0.05$ ). The essential role of WBC in fighting for the body against infections and preventing damage of tissues is well documented. This suggests that Energy 3000 herbal mixture may promote immunity in the animals. Such effects may as well be as a result of elevated vascular permeability. Administration of energy 3000 herbal mixture seems to cause a stimulation of the effector cells of the immune system. Immune boosters are usually given to strengthen and harmonize degenerative body systems and assist the immune system in fighting invading agents such as bacteria and viruses (Al-Mamary, 2002; Ladokun et al, 2015).

Limes (a component of energy 3000 herbal mixture) are high in vitamin C, antioxidants and other nutrients. They may help boost immunity (Ryan and Raman, 2023). Limes are high in active compounds that function as antioxidants in the body such as flavonoids, kaempferol, quercetin and ascorbic acid. Limes are high in vitamin C, a nutrient which help to build immunity. In test tube studies, Vitamin C helped increase the production of white blood cells, which help protect the body against infections and diseases. *Psidium guajava* (Guava) fruit and leaves contain

nutrients including vitamin C and potassium, that may help support the heart, digestion of other body systems (Jane & Judy 2023).

All experimental groups demonstrate significant deviation in red blood cell counts compared to the control group. Group 2 exhibited a significant increase in RBC count, while group 3 and 4 showed a significant decrease ( $p < 0.05$ ). The herbal mixture appears to influence erythropoiesis, however, in a manner not clear.

Energy 3000 herbal mixture appears to have effect on haemoglobin (Hb) levels. Groups 2 and 4 showed a statistically significant increase in Hb levels compared to the control. This finding suggests a potential role of the herbal mixture in influencing oxygen-carrying capacity of the blood through modulation of haemoglobin levels. Higher doses of energy 3000 herbal mixture may encourage haemoglobin synthesis. Foods high in vitamin C, such as limes, may help prevent iron deficiency anaemia by improving the absorption of iron from plant based food. Iron is needed in the formation of haemoglobin

There was a significant difference in the packed cell volume (PCV) of the treated animals when compared with the control. The three treatment groups showed a decrease in PCV when compared to the control. The packed cell volume is a measurement of the proportion of blood that is made up of cells. A low PCV implies a low number of red blood cells. The herbal mixture may affect blood viscosity and oxygen delivery as reflected in PCV changes.

The platelet count result in the study show potential effects of energy 3000 herbal mixture on platelets in rats. The groups given different doses of the herbal mixture i.e 0.2ml, 0.4ml and 0.8ml displayed platelet counts of 217,200 and 224 respectively. Looking at these results, it appears that the energy 3000 herbal

mixture may have an impact on platelet counts . Platelets play an important role in the maintenance of normal hemostasis.

## **Conclusion**

The study suggests that energy 3000 herbal mixture induced significant changes in haematological indices in male albino rats. These findings provide a foundation for further investigations into the clinical implications and mechanistic aspects of the observed effects.

## References

- Adeyemi, O.S. & Akinwande, O.V. (2015). Rat plasma metabolites and renal morphology following oral exposure to a poly herbal mixture. *Research Journal of medicinal plant*, 9(1), 34-41.
- Al-Mamary, M.A. Jr, (2002). Antioxidant activity of commonly consumed vegetables Yemen. *Malays Journal of Nutrition* 8(2): 179-189. PMID: 22692476.
- Ariba, A.j., Oladapo, O.T., Iyatiiwura, C.A,&Dada, O.A. (2007) Management of evecile dysfunction: Perceptions and practices of Nigerian primary care clinicians. *SouthAfrican family Practice*, 49(9), 16 <https://doi.org/10:1080/20786204.2007.10873632>.
- Burnett, A.L., Nehra, A., Breau, R.H., Culkin, D.J., Faraday, M.M., Hakim, L.S., Heidelbaugh, J., Khera, M., Mcvary, KT., Miner, M.N., Christian J., Sadeghi-Nejad, N.H., Seftel, A.D. & Shindel, A.W. (2018). Erectile dysfunction: AUA guideline *The Journal of Urology*, 200(3), 633-641.
- Jane, B. and Judy, L. (2023). 8 Health Benefits of Guava Fruit and Leaves. <https://www.healthline.com>
- John, O.O. & Arundhati, A.K. (2000). Medical Laboratory Science, theory and practice Tata McGraw –Hill Publishing company limited New Delhi, 156-158.
- Ladokun, O., Ojezele, M & Arojoye, O. (2015). Comparative study on the effects of aqueous extracts viscum album (mishetoe) from three host plant on

- haematological parameters in albino rats. *African Health Sciences* 15(2), 606-612. <https://doi.org/10.4314/ahs.v15i2.38>.
- Okonkwo, J.E., Iyadi, K.C., & Effiong, C.O (2004). Effect of Chronic administration of ethanolic extracts of the leaves of *Nauclea Latifolia* (African Peach) on the haematological parameters of male albino rats. *Nigerian Journal of Physiological sciences*. 19(1-2), 10-13.
- Oyewo, E.B., Adetutu, A., Adebisi, J.A., Olorunnisola, O.S., & Adekan A.A (2013). Sub-Chronic administration of *Febi super bitters* triggered inflammatory responses in male wistar rats. *Journal of Medical Sciences* 13(8), 692-699. 10.3923/ijms.2013.692.699.
- Patrick –Iwuanyanwu, K.C., & Nkpaa K.W. (2015) Toxicity effect of Sub-chronic Oral Administration of *class bitters a polyherbal formula* on serum electrolytes and haematological indices in male wistar albino rats. *Journal of xenobiotics*, 5, 20-23.
- Prieto –Castro, R., Puigert –Martínez, A.M., Artigas- Feli, R.P., Illán –mateo, P., Cruz –Callebra, N. & Artes- Ferragua.M. (2020). Opinions, attitudes, and perceptions in relation. Dysfunction and premature ejaculation in the undiagnosed Spanish male population. Results of the PANDORA Project. *Journal of sexual medicine* 17, 1493-1508.
- Ryan, R. (2023). Limes: A Citrus Fruits with Powerful Benefits <https://www.healthline>
- Sunmonu, T.o., & Oloyede, O.B. (2010). Performance and haematological indices in rats exposed to monocrotophos Contamination. *Human and experimental Toxicology* 29(10) 845-850.

Alaabo PO, Njoku GC, Oriaku CE, Iloanusi DU, Ezeh CJ, Ugboaja TC, James UA, Ekwunoh PO, Anyadike NN. Histological Assessment and Haematological Parameters of Honey on Alloxan Induced Diabetic Male Albino Rats. *Int. J. Biochem. Res. Rev.* [Internet]. 2022 Apr. 1 [cited 2024 May 21];31(2):17-26. Available from: <https://journalijbcr.com/index.php/IJBCRR/article/view/747>

Ngozi AO, Edijana OC, Josephine OO, Silvanus OI, Sophia NC. Assessment of the Hematological Parameters of Albino Rats Fed on High Dose of whole Wheat. *J. Pharm. Res. Int.* [Internet]. 2016 Jan. 5 [cited 2024 May 21];10(1):1-8. Available from: <https://journaljpri.com/index.php/JPRI/article/view/447>

Petterino C, Argentino-Storino A. Clinical chemistry and haematology historical data in control Sprague-Dawley rats from pre-clinical toxicity studies. *Experimental and Toxicologic Pathology.* 2006 Jan 20;57(3):213-9.