

THE EFFECT OF JATROPHA TANJORENSIS ON HEMOGLOBIN CONCENTRATION AND PACKED CELL VOLUME OF WISTAR RATS.

BY

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ABSTRACT

Background: *Jatropha tanjorensis* is commonly addressed as hospital is too far due to its use in addressing medical challenges in the local communities where standard health care facilities are lacking.

Methods: 0.5g/kg body weight of the extract of *Jatropha tanjorensis* was administered on twenty wistar rats divided into two groups; ten males and ten females for a period of twenty eight (28) days and blood was collected for hemoglobin concentration and packed cell volume.

RESULTS: Result shows statistically significant increases in the hemoglobin concentration and packed cell volume respectively.

Conclusions: Extracts of *Jatropha tanjorensis* can therefore be used in building up the blood level in Physiological conditions like pregnancy and during menstruation when there is drop in hemoglobin concentration and packed cell volume. This becomes of great use in rural communities where there are inadequate health care..

INTRODUCTION

Plants are used in the modern era for the extraction and development of many drugs which enhance the traditional use of herbal remedies¹. *Jatropha tanjorensis* is a herbaceous plant of euphorbiaceae family and commonly called hospital too far². The leaf is a commonly consumed vegetable in many parts of Southern Nigeria. It is also popular as a natural remedy against diabetes in this region³. Phytochemical screening of *J. tanjorensis* leaf revealed that it contains bioactive principles such as alkaloids, flavonoids, tannins Previous researchers indicated their pharmacological values and toxicological effects while some others claimed that this plant is toxic to the organs of human body⁴ Phytochemical screening of *Jatropha tanjorensis* leaf revealed that it contains bioactive principles such as alkaloids, flavonoids tannins, cardiac glycosides, antraquinones and saponias⁴.

The aim of this work was to assess the effect of *Jatropha tanjorensis* on hemoglobin concentration and packed cell volume (PCV) and thus on the erythropoietic function of the bone marrow.

KEY WORDS: Packed cell volume (PCV), Wistar rats, hemoglobin, *Jatropha tanjorensis*

METHODOLOGY

PREPARATION OF PLANT EXTRACT

Jatropha tanjorensis leaves were collected and the leaves were air dried for 2 days, and oven dried at 40⁰ for 30 minutes. The leaves were ground into powder using a milling machine. The powder sample was then weighed and soaked in a chromatographic tank with about 1.5ml of distilled water for 24hrs. It was then filtered with a Whitman filter paper (125mm) in order to differentiate the residue and the filtrate. The filtrate was concentrated in a water bath and evaporating dish to paste form.

EXPERIMENTAL ANIMALS

Male Westar albino rats (N=10) weighing between 150-205g and female Westar albino rats (N=10) weighing between 145-200g were used for the experiment. The animals were obtained from the animal house, department of Anatomy, University of Benin and were kept in a well ventilated and hygienic animal house under constant environmental and nutritional conditions. The rats were kept in metabolic cages and given food and water ad libitum.

Animals were divided into 4 groups of 10 rats each. Group A and B served as the control group which

comprised of both male and female rats that were not given the extract. Group C consist of only male rats which were given the extract while group D comprised of only female rats that was also given the extract. Groups C and D were administered 0.5g/kg body weight of the extract. The administration was carried out for a period of 28 days.

The rats were sacrificed after 28 days and blood samples were collected for haematological analysis.

Statistical analysis was performed by the Statistical Package for the Social Science (SPSS), Chicago IL USA(2007) Excel Statistical Package. $P < 0.05$ indicated statistical significance.

RESULTS

The result from the study showed that there was no significant difference in the weight of both the male and female rats.

The comparison of the mean PCV of the control (44.6 ± 0.5) and the treated (47.7 ± 0.3) in the male rats showed a significant increase ($p < 0.001$). The comparison of the mean PCV of the control (44.4 ± 0.6) and the treated 47.4 ± 0.8 in the female rats showed a significant increase ($p < 0.05$).

The comparison of the mean Hb of the control (14.9 ± 0.22) and the treated (16 ± 0.1) in the male rats showed a significant increase ($p < 0.001$). The comparison of the mean Hb of the control (14.8 ± 0.2) and the treated (15.8 ± 0.3) in the female rats showed a significant increase ($p < 0.05$).

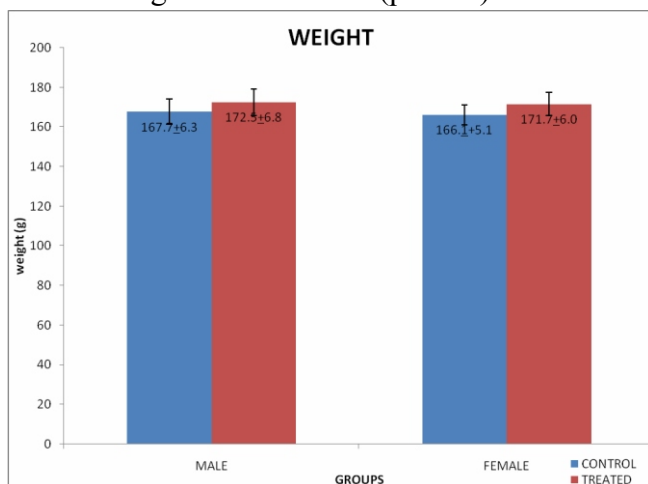


FIGURE 1: A histogram representing the Mean ± SEM of the effect of *Jatropha tanjorensis* on the weight of male control and treated rats also on female control and treated rats.

LEGEND;

No significant difference was observed

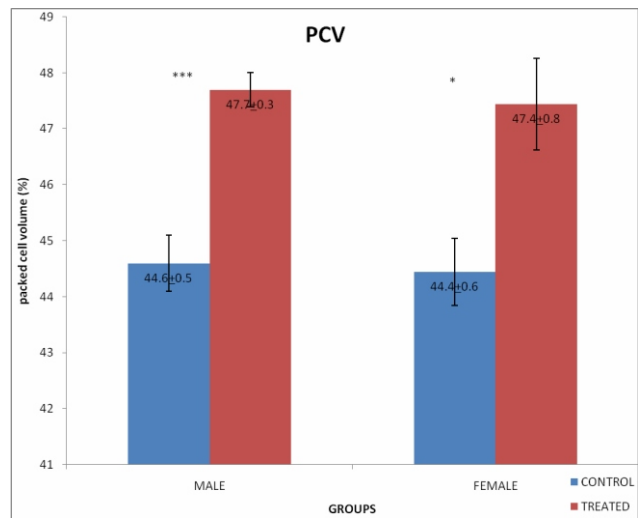


FIGURE 2: A histogram representing the Mean ± SEM of the effect of *Jatropha tanjorensis* on the PCV of male control and treated rats also on female control and treated rats.

LEGEND;

Control vs treated in male rats ($p < 0.001$) p^{***}

Control vs treated in female rats ($p < 0.05$) p^*

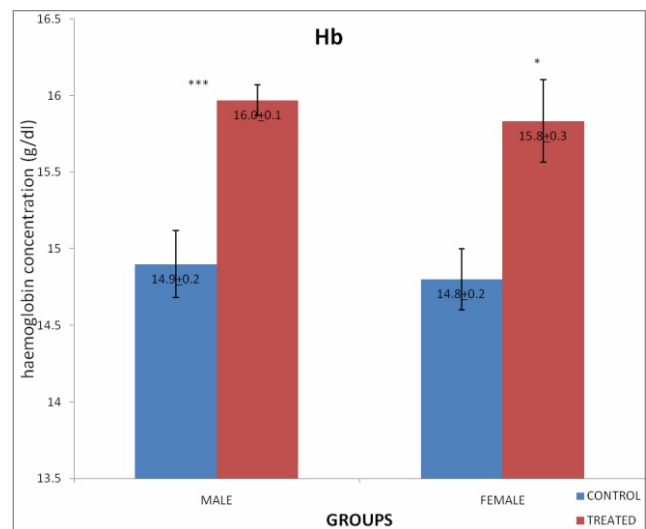


FIGURE 3: A histogram representing the Mean ± SEM of the effect of *Jatropha tanjorensis* on the Hb of male control and treated rats also on female control and treated rats.

LEGEND;

Control vs treated in male rats ($p < 0.001$) p^{***}

Control vs treated in female rats ($p < 0.05$) p^*

DISCUSSION

The weight of the treated rats compared with the control group showed no significant difference. This indicates that the *jatropha tanjorensis* extract does not affect the accumulation and breakdown of fats in the experimental animals.

Jatropha tanjorensis has been shown by Wardlaw and Kessel⁵ to be rich in iron (Fe). This high amount or concentration of iron in the extract increases the amount of iron available for erythropoiesis. Increased amount of iron leads to an increase in the production of red blood cells and hemoglobin. This could be the cause of the observed increase in packed cell volume and hemoglobin concentration in the treated group. It is also possible that some of the chemical constituents of the extract may have erythropoietin-like effect on the bone marrow leading to the increase in the rate of erythropoiesis and a resultant increase in packed cell volume and hemoglobin concentration. Extracts of *Jatropha tanjorensis* can, therefore, be used in building up the blood level in Physiological conditions like pregnancy and during menstruation when there is drop in hemoglobin concentration and packed cell volume. This becomes of great use in rural communities where there are inadequate health care provisions.

Finally the effect of *Jatropha tanjorensis* extract on the haematological parameters assessed by this study is consistent in both the male and female rats and this indicate that the sex of the experimental animal does not significantly alter the effects of the extract.

CONCLUSION

From the study, we can conclude that *Jatropha Tanjorensis* caused an increase in packed cell volume and haemoglobin concentration.

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