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The Histological Effects of Guava Leaf Aqueous Extract on The Liver of Adult Wistar Rats.

Udemezue O.O[1], Ukoha Ukoha[1], Ezejindu D N*[1], Okafor J I[2], Obilor AD[1]
1.Department of Anatomy, College of Health Sciences, Nnamdi Azikiwe University, Nnewi Campus, Anambra State, Nigeria.
2.Department of Anatomy, College of Health Sciences, Anambra State University, Uli, Anambra State, Nigeria.

ABSTRACT

Guava leaves are among the herbs thought to be safe because they are natural yet herbs may contain hundreds of components that causes ill effects directly or through interaction with orthodox drugs. This work is aimed at investigating the histological effects of guava leaf extract on the liver of adult wistar rats. Twenty wistar rats weighing between 160 to 300g were used for the study. They were divided into four groups of five animals each. Group A served as the control and received only distilled water. The experimental groups B, C and D. received oral doses of 250mg/kg, 500mg/kg and 750 mg/kg of guava leaf extract respectively for fourteen days. The animals were sacrificed using, chloroform vapor inhalation method and dissected. Liver tissues were removed, weighed, trimmed down and fixed in 10% formal saline for histological studies. There were no histological alterations in the liver cell of the experimental groups compared with the control.

Keywords: Guava, Liver weight, Body weight, Wistar rats

*Corresponding Author Email ezejindudamian@gmail.com
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INTRODUCTION

Guava bark has been used medically as an astringent and to treat diarrhea in children, while the flowers have been used to treat bronchitis and eye sores and to cool the body. The fruit has been used as a tonic and laxative and for treatment of bleeding gums. The plant has been used in Africa and Asia to prevent and treat scurvy and to treat hypertension in West Africa [1,2,3,4]

Ethnomedicinal reports document use of the plant in treating malaria. Scientific investigations of the medicinal properties of guava leaf products date back to the 1940s [5].

Leaf and bark extracts have demonstrated in vitro antimicrobial activity mostly associated with flavonoids such as morin glycosides, quercetin and quercetin glycosides [6,7,8]

Activity has been demonstrated against a wide range of gram – positive and gram –negative human pathogens including Escherichia coli, vibrio cholera, giardia lambia and shigella species as well as staphylococcus aureus and pseudomonas aeruginosa [9,10,11,12,13,14,15].

The liver is a sensitive organ which plays a major role in the maintenance and regulation of homeostasis in our body. It is the chief organ where important processes like metabolism and detoxification take place [16].

Thus the liver is prone to injury due to chronic exposure to drugs, environmental toxicants and other xenobiotics [17].

Therefore, this work is aimed at evaluating the effect of guava leaf extract on the liver of adult wistar rat.

RESULTS AND DISCUSSION

Morphometric Analysis of body Weights

Table1: Comparison of mean initials and final body weight in all the groups (A, B, C & D) (Mean ± SEM given for each measurement)

Group	Group A	Group B	Group C	Group D
Initial body weight (g)	180. 40 ± 2.40	200.00 ± 4.60	220.40± 2.60	240±-10± 4.20
Final body weight (g)	191.10 ± 3.60	215.80±2.80	225.20±4.10	249 - 20± 7.10

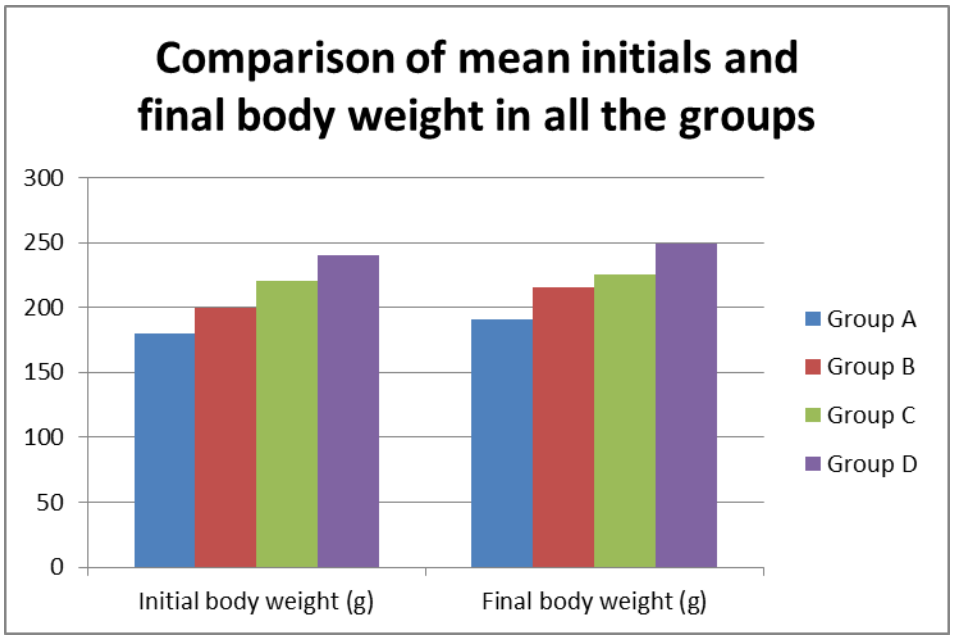


Figure 1: Bar chart showing the mean initial and final body weight

Morphometric Analysis of organ (Liver) weight

Table 2: Comparison of mean relative organ (Liver) weight in all the groups (A, B, C & D) (Mean + SEM given for each measurement)

	Group A	Group B	Group C	Group D
Liver Weight	5.10± 0.210	5.25 ± 0.320	5.38 ± 0.290	5.42 ± 0.400

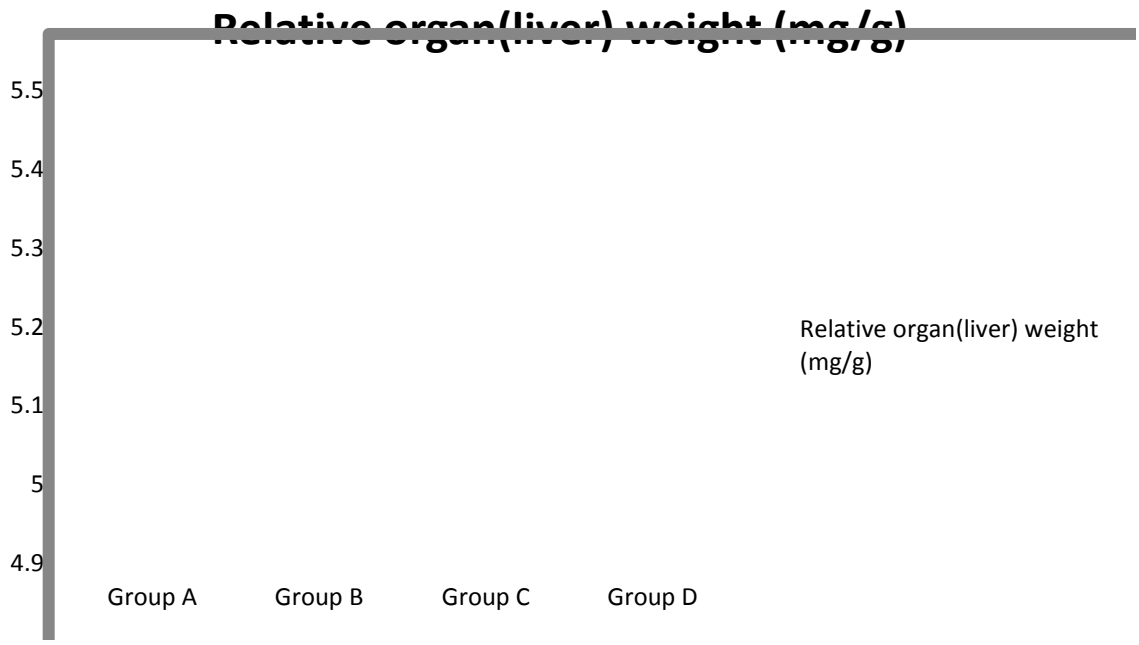
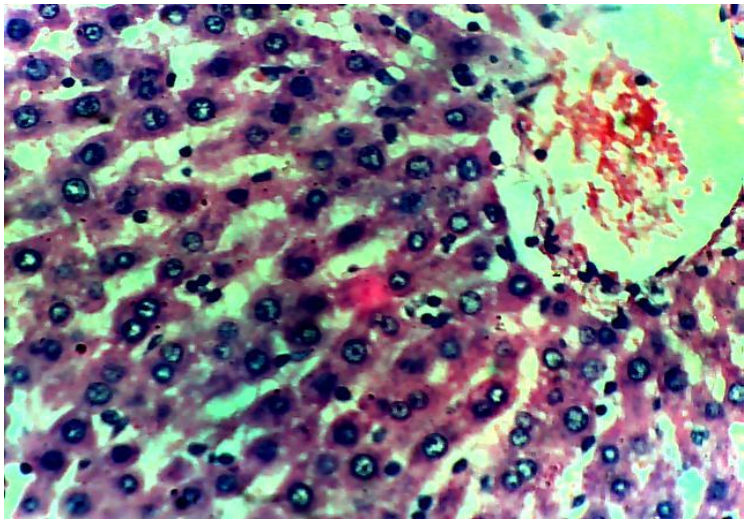


Figure 2: Bar chart showing the relative liver weights of all the groups.

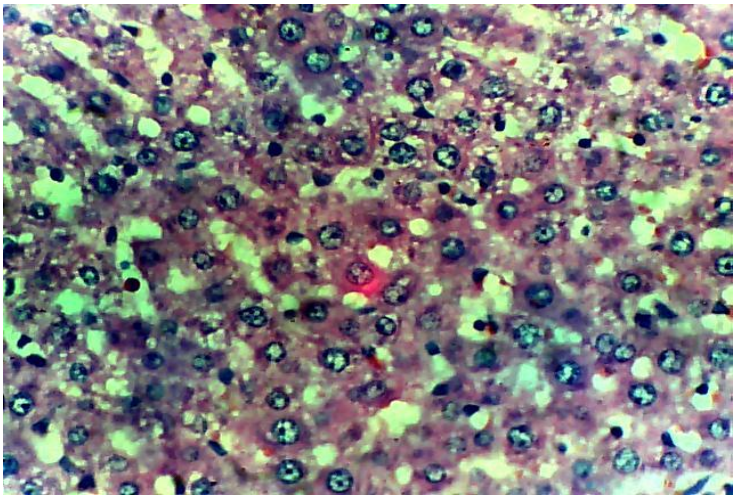
Liver is an organ involved in many metabolic functions and is prone to xenobiotic injury because of its central role in xenobiotic metabolism[18].

The results of the present study showed that the mean final body weight of the experimental groups treated with varying quantities of leaf extract of guava increased significantly relative to the control. The mean relative organ (Liver) weights of the experimental groups were statistically similar with the control. Histopathological findings revealed no fatty changes; no fatty degeneration, preserved cytoplasm not vacuolated, and sinusoid all demarcated, thus showing non distortion of the liver cytoarchitecture. This could be as a result of its phytochemical constituents like carotenoids.

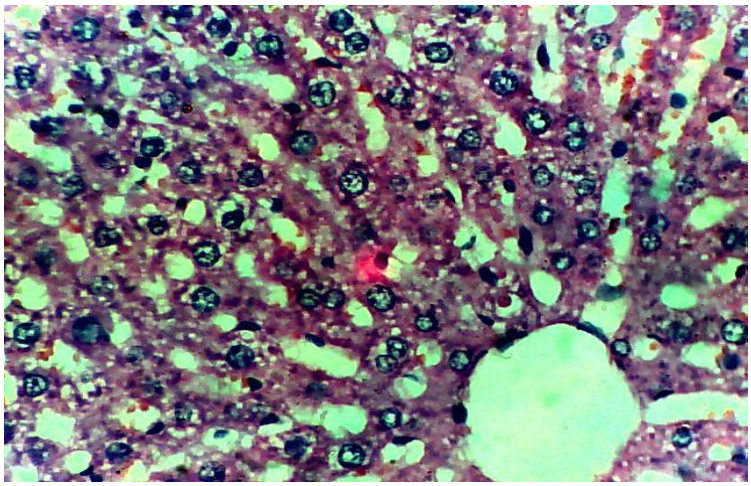
Histopathological Findings:



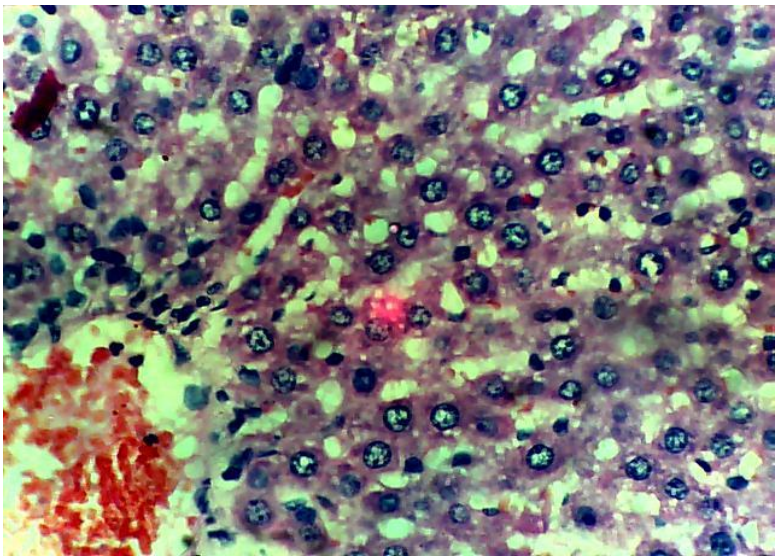
Micrograph 1 control (treated with 0.5ml distilled water) showing portal tract and surrounding hepatocytes arranged in plates, converging towards it. Hepatic plates are separated by spaces called sinusoids. Normal histology



Micrograph 2 (treated with 2.50mg/kg of guava leaf extract) the portal triad is placed centrally; It is composed of the branches of the portal vein, hepatic artery and bile duct.



Micrograph 3 (treated with 500mg/kg of guava leaf extract) the central vein and sinusoid are well distended and hepatic plates are differentiated. It indicates essentially normal histology.



Micrograph 4 (treated with 750mg/kg of guava leaf extract) shows non-disruption of the cytoarchitecture of the liver cells.

CONCLUSION

From the present study, we therefore inferred that aqueous leaf extract of guava at high and low doses has no toxic effects on the liver cells of adult wistat rats.

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