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EFFECTS OF DATURA ALBA NEES LEAVE EXTRACT ON LIPID PROFILE AND ELECTROLYTES PARAMETERS IN MALE WISTAR RATS.

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Abstracts
Lipid profile is an essential parameter that need to be assessed periodically ascertain the levels and ensure that it is within the normal values in other to maintain good health. The aim of the research is to Evaluate The Effects Of *Datura Alba Ness* Leave Extract On Lipid Profile and Electrolytes Parameters In Male Wistar Rats. 20 rats were randomly selected and placed into four groups with five rats per group. The control group was fed with rodent chow and water, the low dose group was given 500mg/kg/bwt of the extract, medium dose group was given 1000mg/kg/bwt of the extract, the high dose group was given 2000mg/kg/bwt of the extract. All the extracts were given orally. Administration lasted for 21 days and on the 22nd day, animals were weighed and sacrifice, blood samples were collected for lipid profile and electrolytes parameter's analysis. Data were analysed using ANOVA and SPSS version 25 were used and $p < 0.05$ was said to be significant. The study shows significant decrease in the chloride levels of the rats administered with both medium and high doses of the extract when compared to the control group. No significant decrease or increase in both potassium and bicarbonate levels. The study shows significant decrease in the chloride levels of the rats administered with both medium and high doses of the extract when compared to the control group. No significant decrease or increase in both potassium and bicarbonate levels. Very low density lipoprotein serum levels significantly increased when low doses of the extract were administered and significantly decrease when medium dose were administered and compared with the control group.
Keywords: Effects, Leaves, Extract, Lipid Profile, Electrolytes, Parameters

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Introduction

The ethanoic extract of Datura metel has been found to lead to a significant improvement in the levels of blood lipid profile, which depicted in significant decrease in LDL as well as total cholesterol level of some treated groups. However, no significant differences (P >0.05) were observed on the levels of triglycerides and VLDL among treatments. It was found that the blood lipids of the rats were within normal range, hence administration of extracts of parts of Datura metel may have no negative or deleterious effects on the lipid profile of the animals. This research work showed that the oral administration of the fruit and seed of the plant extract possess some degree of hypolipidemic activity and may be useful in the management of cardiovascular disease (Arowora *et al* 2016).

There was a gradual decrease in the results obtained for low density lipoproteins (LDL) 27.2 – 20.2 mg/dl and cholesterol 79 -71 mg/dl when ethanolic extracts of Datura metel leaves was administered to. This study suggested that the concentration of ethanolic extracts of Datura metel leaves have different active components that have diverse revamping effects on the blood parameters and lipid profile based on concentration of the extracts and duration of intake of the extract the result obtained for high density lipoprotein was irregular (_Fawehinmi, *et al* 2021*).* The ethanolic extracts of Datura metel could alter the functions of the organs associated with the electrolytes, especially the kidney, the concentrations of serum electrolytes measured in this study increased in all groups administered different concentrations of the extracts, except in group 4 (administered low dose: 300 mg/kg body weight of seed extract), where sodium and chloride reduced non-significantly. There was a significant increase in chloride level in group five (administered high dose: 600 mg/kg body weight of seed extract) compared with normal control. Though these alterations were not statistically significant in almost all the groups administered the various extracts, but it is possible that its physiological effects could be adverse (Imo *et al* 2021).

Materials and method

Materials and Method

Collection and Identification of Plant materials

Fresh leaves of *Datura alba nees* (Thorn apple) were collected from Abua-Odua local government area of Rivers State, Nigeria. The plant was identified and authenticated at Plant Science and Bio-technology department University of Port Harcourt.

Preparation of Extract

Fresh leaves of *Datura alba nees* was washed with water to remove sand and other particles. The plant was then air dried and coarsely grinded and soaked with the methanol solvent. The mixture was allowed to stand for 72hrs with continuous agitation morning and evening. The mixture was filtered to obtain a clear solution which was mounted on a water bath for drying at a temperature of 50˚c in other to denature the sample the extract gotten was preserved for use. The dose to be administered was determined using a stock solution and the average weight of the rats in each group.

Experimental Animal

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Twenty adult male rats weighing between 102-169g were obtained from the Department of Anatomy, University of Port Harcourt. They were accommodated and permitted to acclimatize in their new environment for 14 days. The facility was adequately ventilated and kept at room temperature of 27ºC with 12hour natural light-dark cycle. The animals were kept in cages and maintained at their natural condition The animals were weighed before commencement of administration and after administration. They were kept clean in a disinfected cage with saw dust as their beddings in animal house and with free access to food and water.

Experimental Design

Twenty male Wistar rats were used for this study. They were randomly selected and group into 4 groups with 5 rats per group. Administration of extracts was done for 21 days and on 22nd day, the animals were sacrificed and blood samples were collected.

Group 1. control received 5mls of distil water + feed Group
Group 2. Received 500mg/kg/bwt of (low dose) of extract + feed Group
Group 3. Received 1000mg/kg/bwt of (medium dose) of extract + feed Group
Group 4. Received 2000mg/kg/bwt of (high dose) of extract + feed

Blood Collection

The rats were made to fast overnight, they were anaesthetized using chloroform soaked in cotton wool and placed in a desiccator and the blood samples were collected using cardiac puncture and put in an bottle biochemical analysis.

Analysis of Sample

Blood was used for chemistry analysis as described by Drasar et.al., (2011)

Results

The study shows significant decrease in the chloride levels of the rats administered with both medium and high doses of the extract when compared to the control group (Table 1). No significant decrease or increase in both potassium and bicarbonate levels (Table 1). The study shows significant decrease in the chloride levels of the rats administered with both medium and high doses of the extract when compared to the control group (Table 1). No significant decrease or increase in both potassium and bicarbonate levels (Table 1). Very low density lipoprotein serum levels significantly increased when low doses of the extract were administered and significantly decrease when medium dose were administered and compared with the control group (Table 2).

Table 1: Effect of leave extract of *Datura alba nees* on electrolyte parameters of male Wistar rats.

Group	Potassium	Sodium	Chlorine	Bicarbonate
Control		133.80 ±4.77	74.00 ±1.41	24.80 ±1.16
Low Dose		133.20 ±20.33	75.00 ±1.00	25.80 ±1.32
Medium Dose		143.40 ±9.45	64.80 ±1.28*	25.20 ±1.59
High Dose		125.00 ±9.45	63.00 ±1.30*	24.80 ±1.60

Values are presented in mean±SEM, n=5, * $p \leq 0.05$ statistically significant compare to control

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Table 2: Effect of leave extract of *Datura alba nees* on lipid profile parameters of male Wistar rats.

Group	Triglyceride	Total cholesterol	High density lipoprotein	Low density lipoprotein	Very low - density lipoprotein
Control	2.26 ± 0.07	1.28 ± 0.07	1,47 ± 0.07	1.48 ± 0.07	0.62 ± 0.31
Low Dose	2.02 ± 0.06*	1.06 ± 0.07*	1.23 ± 0.07	1.25 ± 0.05	0.50 ± 0.39*
Medium Dose	2.10 ± 0.07	1.13 ± 0.26*	1.28 ± 0.08	1.33 ± 0.21	0.51 ± 0.10*
High Dose	2.30 ± 0.07	1.26 ± 0.07	1.45 ± 0.10	1.43 ± 0.22	0.55 ± 0.16

Values are presented in mean±SEM, n=5, * $p \leq 0.05$ statistically significant compare to control

Discussion

Lipid profile is an essential parameter that need to be assessed periodically ascertain the levels and ensure that it is within the normal values in other to maintain good health.

The study shows that the effect of leave extract of *Datura alba nees* on electrolyte parameters of male Wistar rats shows significant decrease in chloride levels in animals treated with low dose (500mg/kg/bwt) of *Datura alba nees* extract when administered with both medium and high dose. This decrease in the serum levels of chloride could be attributed to the phytochemicals found in the extract. However, there is no significant increase or decrease in sodium and bicarbonate levels and this may be due to time or dose dependent. increase in bicarbonate level, a decrease in sodium levels and a significant ($p \leq 0.05$) decrease in chloride levels when compared to the control group.

The effect of leave extract of *Datura alba ness* on lipid profile parameters of male Wistar rats shows significant decrease in the serum levels of triglyceride when treated with low (500mgkg/bwt). Total cholesterol is significantly increased with medium dose treatment and equals with the control when treated with the low dose of extract. Very high density lipoprotein (VLDL) significantly increased when treated with low dose of extract and significantly decreased when treated with medium dose of extract respectively. This plant extract could be beneficial to people with hypercholesteremia and thus could be cardiac protective.

Conclusion

Lipid profile is an essential parameter that need to be assessed periodically ascertain the levels and ensure that it is within the normal values in other to maintain good health. The extract from the study shows is significantly decrease serum levels of lipid profile and it could be cardiac protective.

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