# EFFECT OF ORAL ADMINISTRATION OF AQUEOUS STEM BARK EXTRACT OF *KHAYA SENEGALENSIS* ON HEPATOTOXICITY AND HYPERLIPIDEMIA IN RATS

**BY**

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**A RESEARCH DISSERTATION SUBMITTED TO THE DEPARTMENT OF BIOCHEMISTRY, FACULTY OF BIOMEDICAL SCIENCE, BAYERO UNIVERSITY, KANO IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE DEGREE IN BIOCHEMISTRY**

**FEBRUARY 2015**

## DECLARATION

I hereby declare that is work is the product of my own research efforts undertaken under the supervision of Dr. A.J. Alhassan and has not been presented and will not be presented elsewhere for the award of degree or certificate. All sources have been duly acknowledged.

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## CERTIFICATION

This is to certify this dissertation and its subsequent preparation by Muhammad Ibrahim Usman with registration number SPS/12/MBC/00026 was carried out under my supervision in the Department of Biochemistry, Bayero University Kano.

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Dr. A.J. Alhassan

Supervisor

## APPROVAL PAGE

This research work has been examined and approved for the award of Master of Science degree in Biochemistry of Bayero University Kano, for its literary contribution to knowledge.

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## DEDICATION

This project research work is dedicated to my father Alhaji Muhammad Usman and mother Hajiya Hadiza Muhammad.

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## ABSTRACT

The aim of this study is to investigate scientifically the basis for the use of aqueous stem bark extract of K. senegalensis (ASBEKS) for the prevention of liver damage due to $CCl_4$ hepatotoxicity and for the treatment of hyperlipidemia in hypercholesterolemic rats. A total of seventy two rats were used in the study of which thirty six were used for testing the hepatoprotective ability and were grouped into six groups of six rats each. Group one served as normal control. Group two served as $CCL_4$ induced control group, Group three was administered with only ASBEKS at a dose of 2.10g/kg body weight per day for two weeks. Group four, group five and group six were administered with the extract at a dose of 1.05g/kg, 2.10gkg and 3.15g/kg respectively for two weeks. At the end of first week, three rats from each group were selected, rats in groups II, IV, V and VI were induced with liver damage using 120mg/kg of $CCl_4$. The rats were sacrificed after 48hours of CCl4 administration to assess liver function. At the end of the second week, same was done to the remaining three rats from each group. Thirty six rats grouped into six groups were used for testing the anti-hyperlipidemic effect of ASBEKS. Group II, IV, V and VI were fed with high cholesterol rich diet to induce hypercholesterolemia. Group one served as normal control. Group two served as hyperlipidemic control group, Group three was administered only with ASBEKS at a dose of 2.10g/kg body weight per day. Group four, group five and group six were hyperlipidemic and were administered with the extract at a dose of 1.05g/kg, 2.10gkg and 3.15g/kg respectively. At the end of one week, three rats from each group were sacrificed, at the end of the second week, the remaining three rats from each group were also sacrificed and serum was collected for analysis of serum lipid profile. A significant decrease ($p<0.05$) was observed in serum ALT, AST and ALP of GROUP IV rats treated for one week when compared with the $CCl_4$ induced control, contrary to groups V and VI in the first week and groups III-VI in the second week. There was significant ($p<0.05$) decrease in serum Total Cholesterol, LDL-Cholesterol and Triglyceride in hypercholesterolemic rats, with a concomitant increase in HDL-cholesterol at dose of 1.05 g/kg, 2.10gkg and 3.15g/kg respectively in a dose dependent manner even after the first week. The result clearly demonstrated hepatoprotective and anti hyperlipidemic activity of *Khaya senegalensis* supporting the traditional claim.