BIOCHEMICAL AND ANTIOXIDANT EFFECTS OF RUZU® HERBAL BITTERS ON HIGH-FAT DIET FED WISTAR RATS.

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Certification

I hereby certify that this project report was written by **UGOCHUKWU STANLEY KELECHUKWU,** Matriculation number 09CP010124 under my supervision in the Department of Biological Sciences, College of Science and Technology, Covenant University, Ogun State.

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Dedication

I dedicate this work, first and foremost, to God Almighty-the author and finisher of our faith, who protected and provided for me throughout my schooling period: whose grace and favour has always been with me. To my family, especially my lovely parents, Bldr. and Mrs. R.U. Ugochukwu for their love, care and unending support. And to those who love knowledge.

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Abstract

Ruzu herbal bitter (RHB) is an aqueous herbal extract of different parts of *Curculigo pilosa*, commonly known as ground squirrel's groundnut in *English,* Epa kun in *Yoruba*. *Uvaria chamae,* commonly known as bush banana or finger root in *English,* Eeruju in *Yoruba*. and *Citrullus colocynthis,* commonly known as bitter apple or desert gourd in *English,* Baara in *Yoruba*. This study was aimed at evaluating the biochemical and antioxidant effects of RHB on high-fat diet fed rats for eight weeks. A total of thirty six (n=36) rats were randomly divided into six groups of six animals each. Group 2 received standard chow diet and distilled water, while all others received high-fat diet and were treated with the following: distill water as group 2, Pioglitazone (PIO) (30 mg/kg body weight) as group 3, RHB (0.3 ml/kg) as group 4, vitamin E (10 IU/kg) as group 5 and combination of PIO and vit E as group 6. The animals were sacrificed and antioxidant and biochemical tests were carried out by standard methods. Group 4 had significant reduction ($p < 0.05$) in the activities of Alanine aminotransaminase (ALT) and Aspartate aminotransaminase (AST) against group 1. There was also significant reduction in the concentrations of LDL-cholesterol, total and indirect bilirubin against group 1. In addition, significant increase in the concentrations of plasma HDL-Cholesterol as well as reduced glutathione, peroxidase and catalase in the liver and brain of RHB group 4 was observed against group 2. In obese state, prolonged hyperglycaemia provides more substrates for auto-oxidation that produce more free radicals that impair antioxidant defense system resulting in the injury of tissues. RHB (0.2ml/ kg bw), VE (10IU/kg bw) and PIO+VE (PIO 30mg/kg bw + VE 10IU/kg bw) treatment increased the levels of TBARS in the brain and kidney tissues of obese rats. This indicates the increased formation of free radicals, thus not protecting the cell membranes against damage. Altogether, our histological studies reveal the protective effect of RHB and VE as against the multiple organ injury and inflammation found in other groups.