ANTIDIABETIC EFFECT OF P*ERSEA AMERICANA* SEED EXTRACT IS MEDIATED THROUGH ENHANCED INSULIN SECRETION, IMPROVED BETA-CELL FUNCTION, AND REDUCED INSULIN RESISTANCE IN DIABETIC RATS

Ologhaguo Macstephen Adienbo
Department of Human Physiology, Faculty of Basic Medical Sciences, College of Health Sciences, University of Port Harcourt, Port Harcourt, **NIGERIA**
Email: ologhaguo.adienbo@uniport.edu.ng
&
Victor Opuada Hart
Department of Human Physiology, Faculty of Basic Medical Sciences, College of Health Sciences, University of Port Harcourt, Port Harcourt, **NIGERIA**
E-mail: victor.hart@uniport.edu.ng

Corresponding Author: Dr. O. M. Adienbo
Phone: +2348030953240; E-mail: ologhaguo.adienbo@uniport.edu.ng

ABSTRACT

There are reports of increasing prevalence of diabetes melitus worldwide. Also, few studies suggest the hypoglycaemic potentials of *persea americana* seed without assessing its effects on insulin, c-peptide, insulin resistance and beta-cell function in diabetics, hence the necessity for this study. Thirty (30) adult male wistar rats divided into 6 groups of 5 animals each were used. Group 1(normal control), 2 (diabetic control), 3 (extract only), 4, 5 and 6 (diabetes induced + extract 300mg/kg, 600mg/kg and glibenclamide, respectively), administered for 35 days. Fasting blood glucose (FBG) were assessed before alloxan induction of diabetes (day 0), 3 days after induction (day1), day 7 and day 35 respectively. On day 35, all animals were sacrificed, blood collected and serum used for analyses of insulin and c-peptide, while insulin resistance and beta-cell function were calculated from the FBG and insulin. Results show significant ($P<0.05$) increase in FBG on day 1 in the diabetes induced rats (groups 2,4,5 and 6). However, day 35, FBG significantly ($P<0.05$) reduced in the treated diabetic rats, compared to the diabetic control. Also, there was significant ($P<0.05$) decrease in insulin, c-peptide and beta-cell function, with significant ($P<0.05$) increase in insulin resistance, in the untreated diabetic rats, compared to the normal control. On the other hand, the insulin, c-peptide and beta-cell function significantly ($P<0.05$) increased, with a significant ($P<0.05$) reduction in the insulin resistance, in all the extract-treated and gibenclamide-treated diabetic groups, compared to the untreated diabetic control group. We therefore conclude that *persea americana* seed extract causes anti-hyperglycaemia in diabetic rats by enhancing insulin and c-peptide secretion and improving beta-cell function possibly through beta-cell regeneration, while reducing insulin resistance.

Keywords: *Persea americana*, anti-diabetic, insulin, beta-cell function, insulin resistance.