

ABSTRACT

The study investigated the Chemical and bioactive potentials of *Annona muricata* fruit, *Psidium guajava* fruit and *Occinum gratissimum* leave extracts on alloxan-induced diabetic rats. The specific objectives of the study were (i) production of extracts from the fruits and the vegetables for treatment of the rats. (ii) determine weights, and biochemical evaluation of the treated rats. (iii) to evaluate the liver marker enzymes (AST, ALT and ALP) and (iv) to evaluate the haematological parameters of the treated rats. The extracts were produced, chemical analysis done and extracts fed to the rats, the weight, biochemical, indices, liver enzymes and haematological indices of the treated rats were evaluated using standard methods. Thirty (30) healthy adult male albino rats weighing 150-300g were used for the 14days study. The rats were allocated to five groups (A-E) of six rats each on the basis of body weights. Group A received no extract and served as negative control, groups (B,C and D) constituted the test groups and received *Annona muricata* fruit, *Psidium guajava* fruit and *Ocimum gratissimum* leave extracts respectively. The three test groups were sub-divided into two groups of three rats each and they received two divided doses (30ml/kg and 50ml/kg) of the extracts. Group E received 0.6mg/kg of glibenclamide, and served as positive control. 120mg/kg bw of alloxan was injected intraperitoneally as a single dose to induce diabetes mellitus in all the rats in the five groups. Blood samples were collected from the retro bulba plexus of the medial canthus of the eye of the rats with the help of capillary tubes for all the analysis before and after extracts administration, chemical and bioactive compositions of the test diets were determined using standard methods. The biochemical, haematological and liver enzymes of the treated rats were evaluated using standard methods. The statistical data were presented as mean \pm Standard error of the mean (SEM). The differences between groups were compared using analysis of variance to evaluate dose dependent effects of the extracts. The positive and negative controls were analyzed using 2-way analysis of variance. Statistical test with probability value less than 0.05 were considered statistically significance ($P < 0.05$). At the end of the study, Group A had significant weight loss ($P < 0.05$), increased fasting blood sugar (FBS), cholesterol and Increased levels of liver enzymes. The result revealed significant ($P < 0.05$) reduction in FBS in groups B and C at both doses of the extracts. Significant weight gain in B and C when compared with the other groups. Protein analysis revealed mild increase in total protein in B,C and E, significant increase in globulin ($P < 0.01$) in B., significant increase in liver enzymes in A, significant reduction of Alanine amino transferase (AST) in group B. Haematological analysis showed significant increase ($P < 0.05$) in Hb, PCV and RBC in group C. Comparing the two doses of each extract, 50ml/kg bw showed more positive effect although not statistically significant. The synergistic effects of compounds in these extracts could have played a role in their hypoglycemic and hypolipidemic effects by reducing the oxidative stress.