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J Food Nutr Disor 2018, Volume 7
DOI: 10.4172/2324-9323-C4-018

World Congress on
Advanced Food Science and Technology
October 15-16, 2018 Paris, France

Functional assessments and histopathology of hepatic and renal tissues of Wistar rats fed with cocoa containing diets

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The liver and kidney are organs of homeostasis. Biochemical and histological methods were used to determine functional integrity of renal and hepatic tissues of Wistar rats following the consumption Processed Cocoa Bean-Based Beverages (PCB-BB) and Raw Cocoa Bean Products (RCBP) containing diets. 30 Wistar rats were designated on the basis of experimental diets received for 28 days. At the end of the 28 day experimental feeding duration, blood samples as well as renal and hepatic tissues from the experimental rat groups were measured for functional and histological indices, respectively. Serum Alanine Transaminase (ALT) activities of the experimental rat groups showed no significant difference ($p>0.05$) and were within relatively narrow range of 32.17±4.98 IU/L-41.00±10.85 IU/L whereas, Serum Aspartate Transaminase (AST) activities gave wide variation within the range of 15.67±2.13 IU/L-34.83±8.31 IU/L; $p<0.05$. Serum bilirubin concentrations of experimental rat groups were <1.0 mg/dL. Serum total protein and albumin concentrations varied within relatively narrow range. Serum creatinine concentration was significantly lower ($p<0.05$) than serum urea concentration. Histology showed evidence of moderate disarrangement of hepatic tissues architecture and degenerated tubules and glomerular turfs. The pattern of activity of ALT>AST in serum appeared to correlate with the extent of disarrangement of hepatic tissue architecture. The experimental rat groups did not exhibit hyperbilirubinemia. Also, PCB-BB and RCBP containing diets did not substantially interfere with the capacity of the hepatocytes to biosynthesized plasma proteins and the functionality of renal tissues.

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