

FUNCTIONAL ASSESSMENTS AND HISTOPATHOLOGY OF HEPATIC AND RENAL TISSUES OF WISTAR RATS FED WITH COCOA CONTAINING DIETS

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Background & Aim: The liver and kidney are organs of homeostasis. The present study ascertained functional integrity of renal and hepatic tissues of wistar rats fed with processed cocoa bean-based beverages (PCB-BB) and raw cocoa bean products (RCBP) containing diets using biochemical and histological methods.

Materials & Methods: Thirty wistar rats were designated on the basis of experimental diets received for 28 days. At the end of the feeding period, blood samples were drawn and renal and hepatic tissues were excised from the experimental rat groups for functional tests and histological examinations, respectively.

Results: Serum 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 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.

Conclusions: 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 biosynthesize plasma proteins and the functionality of renal tissues.

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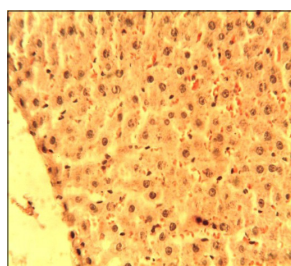


Figure 1: Photomicrograph of section of organ from Wistar rat fed cocoa beverage. A: Hepatic tissue showing the central vein (CV) and normal plates of hepatocytes (blue); H&E $\times 400$