

Comparative effect of withdrawal from exposure on gasoline and diesel induced nephrotoxicity in male albino wistar rats

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Exposure to gasoline and diesel has been reported to induce nephrotoxicity in rats. This study was designed to assess the effect of withdrawal from exposure on the nephrotoxic effects associated with oral exposure to gasoline and diesel in male rats. Four groups of the experimental test rats were respectively exposed orally to diesel and gasoline solvents ($4.0 \text{ mgkg}^{-1} \text{ day}^{-1}$ and 6 days/week,) for 60 days, after which two respective groups were sacrificed for nephrotoxicity assay while the remaining two groups were withdrawn from exposure for the next 60 days before sacrificing them for biochemical assay. The results showed that oral exposure to diesel and gasoline induced a significant ($p < 0.05$) increase in serum creatinine, urea, BUN, as well as decrease in kidney tissue MDA and SOD concentrations in rats. However, the percentage increase in serum creatinine, urea, BUN, and decrease in kidney tissue MDA and SOD concentrations recorded for rats exposed to diesel (300.1 ± 30.8 , 130.3 ± 18.5 , 125.6 ± 16.4 , 141.8 ± 10.4 and 75.0 ± 8.6 percents, respectively) were significantly higher ($p < 0.05$) compared to the percentages recorded for rats exposed to gasoline (150.0 ± 17.5 , 80.3 ± 13.2 , 72.1 ± 11.4 , 120.9 ± 15.2 and 61.5 ± 10.1 percents, respectively). The result of this study also showed that withdrawal from exposure reverses the levels of serum creatinine, urea, BUN, and kidney tissue MDA and SOD to the levels approximately within the control range. This study confirms that oral exposure to diesel and gasoline may be a risk factor for nephrotoxicity, with diesel being more nephrotoxic than gasoline, and that withdrawal from exposure for equal duration of the exposure period is capable of reversing the induced nephrotoxicity in rats.

Biography

Saviour Udo Ufot completed his B.Sc. in Biochemistry at the age of 22 from University of Calabar, Calabar, Nigeria, and M.Sc. in Pharmacology at the age of 24 years from University of Ibadan, Ibadan, Nigeria. He has worked as senior research officer (Bioremediation and Pollution Control) in Shell Petroleum Development Company of Nigeria from 1998 to 2002, Health Safety and Environment Specialist in Total E&P Nig. Ltd. since 2002. Presently, he is working on his Ph.D. in Biochemical Toxicology in the Department of Biochemistry, University of Calabar, Calabar, Nigeria, under the supervision of Prof. Eyony U. Eyong and Dr. Friday E. Uboh.

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