

# 3<sup>rd</sup> International Summit on Toxicology & Applied Pharmacology

October 20-22, 2014 DoubleTree by Hilton Hotel Chicago-North Shore, USA

## Effect of combined administration of vitamins C and E on some renal functions indices of rats exposed to nitrocellulose thinner

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Nitrocellulose thinner (NCT) is one of the commonly used industrial chemical solvents. Oral exposure to NCT has been reported to cause nephrotoxicity in rat. The levels of such serum biochemical indices as creatinine, urea, uric acid and electrolytes ( $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{HCO}_3^-$  and  $\text{Cl}^-$ ) are useful in assessing the functional integrity of renal tissues. This study assessed the effect of combined administration of vitamins C (Vit C) and E (Vit E) on serum creatinine, urea, uric acid,  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{HCO}_3^-$  and  $\text{Cl}^-$  in male rats orally exposed, once daily, to 40.0mg/kg body weight of NCT, for 28 days. Nine groups, of six male rats each, were administered with distilled water, vegetable oil, Vit C only, Vit E only, Vit C + Vit E, NCT only, NCT + Vit C, NCT + Vit E, and NCT + Vit C + Vit E, respectively, for 28 days. On the 29<sup>th</sup> day of the experiment, the rats in each group were sacrificed and blood samples collected for serum creatinine, urea, uric acid,  $\text{Na}^+$ ,  $\text{K}^+$  and  $\text{Cl}^-$  analyses. The results showed that exposure to NCT for 28 days caused a significant ( $P < 0.05$ ) increase in serum creatinine, urea, uric acid,  $\text{K}^+$  and  $\text{Cl}^-$  levels, and decrease in  $\text{Na}^+$  levels compared to the control. Administration of vit C and vit E singly, or in combination, did not cause any significant ( $p > 0.05$ ) difference in the level of these indices, compared to control. However, the serum creatinine, urea, uric acid,  $\text{K}^+$  and  $\text{Cl}^-$  levels obtain for rats treated with NCT + Vit C, NCT + Vit E and NCT + Vit C + Vit E were significantly ( $p < 0.05$ ) lower, while  $\text{Na}^+$  was higher, compared respectively with the levels recorded for rats given NCT only. Interestingly, the levels of these indices recorded for rats given NCT + Vit C, NCT + Vit E and NCT + Vit C + Vit E were within the same range as the levels recorded for the control group, with the levels for NCT + Vit C + Vit E group being closest to the control. The results of these serum indices correlated with the results of tissue histological assessment. From these results, it may be concluded that the nephroprotective potency of combined administration of vitamins C and E is higher than that of individual administration.

### Biography

Friday E Uboh completed his PhD at the age of 35 from University of Calabar, Calabar, Nigeria, and is presently an Associate Professor of Biochemistry, with Toxicology as his area of research interest. He served as the acting Head of Biochemistry Department in the Department of Biochemistry University of Calabar, Calabar, Nigeria, from 2011 to 2013. He is a member of Nigerian Society of Biochemistry and Molecular Biology, and Institute of Public Analysts of Nigeria. He has more than 60 papers published in reputable journals, and is a reviewer and Editorial Board Member of many journals of repute. He has also presented many conference papers, locally and internationally.

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