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Assessment of the Effect of Concurrent Administration of Artemether and Nevirapine on Antioxidant Indices in Wistar Rats

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There is a possibility of co-administration of the antimalarial drug, artemether (ART) and the antiretroviral drug, nevirapine (NVP) in HIV-malaria co-morbidity. These drugs may have potential toxic effects on human following co-administration. The investigation was therefore conducted to assess the effect of co-administration of ART and NVP on oxidative stress in both non-immuno-compromised and immuno-compromised Wistar rats.

Animals were used in accordance with international ethical guideline regarding the handling and use of laboratory animals (1). Rats were divided into 6 groups of 6 per group. Groups 4, 5 and 6 received 30 mg/kg NVP daily for 21 days. From days 15 to 21, groups 2 and 5 received 5 mg/kg ART (ART_5) while groups 3 and 6 received 10 mg/kg ART (ART_{10}). All other animals received the vehicle (3% v/v Tween 80 (T_{80})), up to day 21. All drug administration was via the intraperitoneal route. On day 22, animals were sacrificed and sera obtained. The levels of malondialdehyde (MDA) were measured as described (2), superoxide dismutase (SOD) as described (3), catalase (CAT) as described (4), and glutathione peroxidase (GPx) as described (5) were determined using commercial kits obtained from Reckon Diagnostics P. Ltd, India. In a separate experiment, the above protocol was repeated in rats immuno-compromised with dexamethasone 20 mg/kg on day 1 followed by booster doses of 10 and 5 mg/kg on days 8 and 15 respectively. The results were calculated as means ± standard error of mean and analysed using ANOVA, followed by Dunnett's post hoc test. P values less than 0.05 were considered statistically significant.

The level of MDA increased significantly ($p<0.05$) in NVP + ART_{10} administered group in both non-immuno-compromised (2.0±0.1 versus 1.3±0.1) and immune-compromised (1.8±0.1 versus 1.4±0.1) Wistar rats while GPx decreased significantly when compared with the control in non-immuno-compromised (41.0±1.4 versus 52.3±2.5) and immuno-compromised (43.4±1.3 versus52.0±1.5) Wistar rats. There was no statistically significant change ($p>0.05$) in the levels of SOD or CAT between groups.

The result of this study indicated that concurrent administration of ART and NVP altered some markers of oxidative stress in Wistar rats. Increased vigilance is therefore advisable when treating malaria with ART in HIV patients on NVP.

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