

Ameliorative Effect of Vitamin E on Biochemical and Ultrastructural Changes in Artemether-induced Renal Toxicity in Rats

Efecto Paliativo de la Vitamina E sobre los Cambios Bioquímicos y Ultraestructurales en la Toxicidad Renal Inducida por Arteméter en Ratas

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SUMMARY: This experiment was designed to study the administration of normal doses of one of recent antimalarial drug and coadministration of vitamin E on the kidney tissue. A total twenty-four adult male albino rats were used and divided into four groups: the first one

served as a control, the second received artemether orally for three days consecutively. The rats of the third and fourth groups received the same

dose of artemether concomitantly with 50 and 100 mg/kg vitamin E orally daily for 2 weeks. After the last dose, the rats were sacrificed and the

kidney tissues with blood samples obtained and processed for light, electron microscopic and biochemical analysis. Histologically, artemether

treated kidneys showed atrophied glomeruli with widened urinary space and kidney tubules were degenerated with disturbed contour and some

vacuoles inside it. Ultrastructurally, the glomeruli of this group showed hypertrophic endothelial cells, irregularity of its basement membrane,

disrupted foot processes and filtration slits. The kidney tubule cells showed loss of basal infoldings, cytoplasmic vacuolation, polymorphic

damaged swollen mitochondria a loss of its microvilli towards its capillary lumen. Artemether plus vitamin E of the rat kidney groups showed

improvement of morphological changes compared to the changes seen in artemether alone. These data were confirmed by biochemical findings

with marked improvement of blood urea and creatinine levels and increase of anti-oxidant enzyme activities of glutathione peroxidase and

superoxide dismutase in the vitamin E treated groups. The results of this study revealed that vitamins E can improve the adverse changes of

artemether of rat renal tissue.

KEY WORDS: Artemether; Rats; Vitamin E; Light and electron microscopy; Biomarkers of kidney injury.