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### **Neurobiochemical roles of vitamin C and Water melon juice extract on electrolytes, antioxidant enzymes and oxidative stress biomarkers in the treatment of ischemic stroke in wistar rats.**

*N. Suleiman<sup>1</sup>, I. Bulama<sup>1</sup>, N. Muhammed<sup>1</sup>, M. Suhailu<sup>1</sup>, N. Abdullahi A.<sup>1</sup>, A. Jimoh Adekunle<sup>1</sup>*

*B. Salihu A.<sup>1</sup>, B. Salisu<sup>1</sup>, A. Abdullahi Yahaya<sup>1</sup>, Y. Saidu<sup>1</sup>, L. Suleman Bilbis<sup>1</sup>, G. Sani<sup>1</sup>*

<sup>1</sup>Usmanu Danfodiyo University Sokoto, Department of Veterinary Physiology and Biochemistry, Sokoto, Nigeria

Oxidative stress is a major participant that contributes to brain reperfusion injury following ischemic stroke (IS). Excessive generation of reactive oxygen species (ROS) and impairment of endogenous antioxidant defense mechanism begins immediately after the onset of IS, resulting in secondary events leading to neuronal dysfunction and cell death. This study reports the role of vitamin C and water melon juice extract in the management of surgically induced ischemic stroke in Wistar rats. Twenty five albino rats were subdivided into five groups of five rats each. Ischemic stroke was induced in albino rats using middle cerebral artery occlusion (MCAO), 47.5mg/kg body weight of Vitamin C and water melon juice extract was orally administered to the rats for two weeks. Antioxidant enzyme biomarkers (catalase (CAT) superoxide dismutase (SOD) and glutathione peroxide (GPX) activities and oxidative stress biomarkers (malondialdehyde (MDA) concentration, were assessed. Electrolytes (Sodium, potassium, calcium, magnesium, phosphorus) and glucose levels were also assessed. Ischemic stroke caused significant ( $p < 0.05$ ) decrease in the activity of the enzymes and significant increase ( $P > 0.05$ ) in the concentration of MDA. IS also caused significant ( $p > 0.05$ ) increase in electrolytes and glucose levels in stroke induced non treated rats. Treatment with the 47.5mg/kg BW of the vitamin C and water melon juice extract resulted in the significant increase ( $P > 0.05$ ) of the activities of CAT, SOD and GPX. Also, there was significant ( $p < 0.05$ ) decrease in the concentration of MDA. After the treatment, there was significant ( $p < 0.05$ ) decrease in the electrolytes and glucose levels in the stroke induced treated rats. The study concluded that antioxidants and water melon juice extract reduces oxidative stress and its biomarkers, so also, it balances the level of electrolytes in ischemic rats and underscores relevance of antioxidants and water melon juice extract in the management of IS, this might open a new therapeutic possibilities for stroke treatment.

Key words: Ischemic stroke, Antioxidants, water melon juice extract, Oxidative stress, Wistar rats