

Nitric oxide inhibitor effect on TNF- α in transient cerebral ischemia and reperfusion in rats

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Stroke is the second cause of death and a frequent cause of disability globally. Pro-inflammatory tumor necrosis factor- α (TNF- α) is elevated after cerebral infarction in human brain; and the interaction between TNF- α and Nitric Oxide (NO) in cerebral ischemia/reperfusion (I/R) is still doubtful. The aim of this work was to examine the relation between TNF- α and nonselective Nitric Oxide synthase (NOS) inhibitor (N-nitro-L-arginine-methylester (L-NAME)) on rats subjected to transient focal cerebral I/R. 30 adult male Wistar rats divided into three groups 10 rats in each: First group was Sham-operated and served as a control, I/R group of rats infused with 0.9% normal saline intraperitoneally 15 minutes prior to 30 minutes of left common carotid artery (CCA) occlusion; then allowed for reperfusion for 24-hour. A test group infused with L-NAME intraperitoneally 15 minutes prior to the same I/R period. Neurobehavioral assessments were evaluated using six tests. Quantitative assessment of TNF- α using ELISA method; NO metabolites (nitrite, nitrate) in both serum and the affected cerebral hemisphere were done. The L-NAME group showed a significant improvement in neurological deficit compared to both I/R and control groups ($P < 0.001$). The serum and brain tissue of TNF- α and NO were significantly increased in I/R group compared to the control group, while L-NAME administration resulted in a significant decrease in TNF- α and NO compared to the I/R group ($P < 0.001$). These data demonstrated that L-NAME significantly improves neurological deficit and shows a potential neuroprotection through reducing TNF- α in a rat's model of transient focal cerebral ischemia reperfusion.

Biography

Amal Mahmoud Saeed is the head of physiology department Faculty of Medicine/University of Khartoum 1996-2004, Vice Dean of Graduate College for Post Graduate Medical Health Sciences 2003-2006 and Director of Educational Development Centre for Health profession 2006 -2008. Now she is the President of the Sudanese Physiological Society and African Physiological society and a member of the educational committee in the International Union of Physiology.

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