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2ⁿᵈ International Conference on

Neurological Disorders and Stroke

April 28-30, 2016   Dubai, UAE

Effect of dietary ginger and turmeric rhizomes on ectonucleotidases, adenosine deaminase and acetylcholinesterase activities in synaptosomes from the cerebral cortex of hypertensive rats

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Ginger and turmeric rhizomes are used in folk medicine for the treatment of several cerebrovascular diseases with limited scientific basis for their action. Hence, in this study, we investigate the effects of two Zingiberaceae varieties (ginger and turmeric) on ectonucleotidases (NTPDase and 50-nucleotidase), adenosine deaminase (ADA) and acetylcholinesterase (AChE) activities in synaptosomes of cerebral cortex from L-NAME induced hypertensive rats. The animals were divided into seven groups (n=10): Normotensive control rats; hypertensive rats; hypertensive rats treated with atenolol; normotensive and hypertensive rats treated with 4% supplementation of turmeric and ginger rhizomes, respectively. After 14 days of pre-treatment with both rhizomes the animals were induced with hypertension by oral administration of L-NAME. The results revealed an increase of ATP and AMP hydrolysis as well as ADA and AChE activities of cerebral cortex synaptosomes in induced rats when compared with the control. The supplementation of both rhizomes prevented these alterations by decreasing ATP and AMP hydrolysis and ADA and AChE activities in cerebral cortex. In conclusion, this study demonstrated that both rhizomes interfere with the purinergic and cholinergic neurotransmission in cerebral cortex of hypertensive rats. Therefore, we can suggest that both rhizomes exert neuroprotective potential under hypertensive state.

Biography

Ayodele Jacob Akinyemi has completed his PhD from Federal University of Technology, Akure and Lecturing in Afe Babalola University, Ado-Ekiti. He has published more than 25 papers in reputed and well indexed journals.

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J Neurol Disord
ISSN: 2329-6895 JND, an open access journal

Stroke 2016
April 28-30, 2016

Volume 4, Issue 2(Suppl)

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