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Study of the effect of inhibiting galanin in Alzheimer's disease induced in rats

Baraka A[1] and ElGhotny S[2]
[1]Clinical Pharmacology Department, [2]Physiology Department
Faculty of Medicine, Alexandria University, Egypt

It is recently reported that galanin plays a role in memory decline that is the primary behavioral symptom of Alzheimer's disease. The aim of the present study was to study the impact of administration of two antidiabetic drugs that might inhibit galanin, namely glibenclamide and pioglitazone, on the behavioral, and neurochemical changes in Alzheimer's disease--induced in rats by intracerebroventricular (i.c.v.) injection of beta amyloid (A beta). The present study was conducted on 60 male Wistar rats that were divided into 6 groups: group I (control group) which received i.c.v. scrambled peptide, group II (i.c.v.-Abeta group) which received i.c.v.-Abeta, groups III and IV that received, respectively, glibenclamide and pioglitazone daily orally for 3 weeks following scrambled peptide administration as well as groups V and VI that received, respectively, glibenclamide and pioglitazone daily orally for 3 weeks following Abeta administration. i.c.v.-Abeta resulted in significant behavioral alterations suggesting Alzheimer's disease, where there was significant impairment in spatial cognition, evaluated by Morris water maze task, and in learning and memory performance, assessed using passive-avoidance learning task. i.c.v.-Abeta also resulted in significant increase in hippocampal hyperphosphorylated tau protein as well as galanin. Administration of studied antidiabetic drugs, glibenclamide and pioglitazone, resulted in significant improvement in spatial cognition and in learning and memory performance, as well as significant decrease in hippocampal hyperphosphorylated tau protein and hippocampal galanin concentrations. Our findings suggest that a pharmacologic approach to inhibit galanin in the brain, either by glibenclamide or pioglitazone might dramatically improve symptoms in Alzheimer's disease

mnhbaraka@yahoo.com