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Research Article

SOLANIUM BETACEUM IMPROVES COGNITIVE FUNCTION BY DECREASING N-METHYL-D-ASPARTATE ON ALZHEIMER RATS MODEL

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ABSTRACT
Objective: The purpose of this study was to evaluate the effect of Solanium Betaceum towards cognitive function, its memory and the level of N-Methyl-D-Aspartate receptor (NMDAR) and brain derived neurotrophic factor (BDNF) as a drug candidate therapy for Alzheimer rats model.
Methods: Fifty adult albino rats were divided into five groups (G0, G1, P1, P2 and P3). Four groups (G1, P1, P2 and P3) of Alzheimer's disease (AD) rats were induced by amyloid-beta with dose 2 g/L for 21 days period and three groups (P1, P2 and P3) in 21st day administered partially with 5. Betaceum in Group P1, P2, and P3 (100 mg/kg bw/day, 100 mg/kg bw/day, and 100 mg/kg bw/day, respectively) for 31 days. The level of NMDAR and BDNF was measured by enzyme-linked immunosorbent assay methods, whereas memory was measured by the Morris water maze test.
Results: 5. Betaceum administration increased cognitive function significantly (p<0.05) of AD induced rats by decreasing the time to reach the target of Morris water maze and maintaining the low levels of NMDAR significantly (p<0.05), and the level of BDNF did not increase significantly (p>0.05). These results indicated that etanaric extracts of 5. Betaceum could decrease brain NMDAR and increase cognitive function by promote better memory function but did not significant increased the level of BDNF in AD-induced rats.
Conclusion: This study revealed that the treatment of AD-induced rats with 5. Betaceum extracts significantly improve memory function and decrease the level of NMDAR.
Keywords: Solanium Betaceum, Memory, N-Methyl-D-Aspartate receptor, Brain-derived neurotrophic factor, Alzheimer (Alzheimer, Alzheimer)

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INTRODUCTION
Alzheimer's disease (AD) is a progressive, irreversible age-related neurodegenerative disease, is characterized by gradually progressive debilitating cognitive decline such as memory loss, disorientation in time and space, difficulty in problem solving, language impairment, personality impairment, behavioral symptoms (delusions, paranoia, and delusions), and among others [1-3]. AD is the sixth leading cause of death and a leading cause of dementia among elderly population of American [1]. AD, neuron, a hex, neuron, with a

Hippocampus, a fundamental role of learning and memory represents the primary region of adult brain neurogenesis and serves the target potential for brain neuroplasticity [11]. Brain derived neurotrophic factor (BDNF) is one of the neurotrophic factor is learning and memory particularly dependent oligomers in the brain and playing a key regulatory role in development, regulation and plasticity of the hippocampus [12-15]. BDNF, a systemic plasticity marker is important for long-term potentiation (LTP) like mediating the regulation of excitatory synapses during early LTP [11,16]. BDNF