Alzheimer’s disease (AD) is a progressive neurodegenerative, age-related disease characterized by dementia and the loss of neuronal cells in the brain. GH secretion is reduced in normal elderly subjects as well as in patients with AD. This study aimed to evaluate the peripheral administration of growth hormone (GH) on hippocampal dentate gyrus (DG) electrophysiological activity in NBM-lesioned male Wistar’s rats (20-24 months old) induced by ibotenic acid (5µg/µl, in each side). The groups include control group; n-L+GH and n-L+Veh groups: non-lesioned rats with GH and vehicle treatments (1mg/kg, 9.00 am, for 10 consecutive days); L group: NBM lesioned rats; L+GH and L+Veh groups: NBM lesioned rats with GH and vehicle treatments with same volume of GH and vehicle treatments. In all groups electrophysiological technique was used for recording the field excitatory post-synaptic potential (fEPSP) and after high frequency stimulation, long-term potentiation (LTP) in each group.

The results indicated that the slope and amplitude as well as area under curve of population spikes were elevated significantly (p< 0.001) in L+GH group as compared with L and L+Veh groups and in L and L+Veh groups as compared with n-L+GH and n-L+Veh groups (p< 0.001). GH potentiate electrophysiology characteristic in animals with NBM lesion. As the IGF-1 itself is earlier shown to improve cognitive function is likely that the observed effect of GH on brain directly after pass the BBB or is mediated through release of IGF-1 from peripheral tissue into the circulation for further transport across the BBB.