Intranasal Insulin Enhances Spatial Memory and Cognitive Adjustment

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Spatial memory is the part of memory responsible for recording information about one's environment and its spatial orientation. Spatial memory is crucial function of brain that a subject can navigate pathways and reach the target. Here we investigate the effect of intranasal insulin on spatial memory and memory extinction for cognitive adjustment when the target changed. Thirty-seven male mice were randomly divided into two groups, one group was intranasally administered rapid-acting insulin (Actrapid) with doses of 4 IU/day and the other group was intranasally administered saline as control. Spatial memory was evaluated by escape latency in the Morris water maze and the length of swimming path to platform. Memory extinction was evaluated by the duration mice stay at location of previous island which was removed. Our results indicated that intranasal insulin reduced both escape latency and the length of swimming path to platform as well as the duration of stay at removed island. Interestingly, effect of escape latency and path length reduction occurred from third day after the first dose while reduction of duration of stay at previous island occurred at the first day of memory extinction test. These results suggest that intranasal insulin enhanced both spatial memory and memory extinction for cognitive adjustment. Results from this study provided evidences of the effects of insulin not only enhanced spatial memory, but also enhance cognitive adjustment in novel context.

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