The prospective role of mesenchymal stem cells exosomes on circumvallate taste buds in induced Alzheimer's disease of ovariectomized albino rats: (Light and transmission electron microscopic study)

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Abstract

OBJECTIVE:
To elucidate the effect of Alzheimer's disease on the structure of circumvallate papilla taste buds and the possible role of exosomes on the taste buds in Alzheimer's disease.

DESIGN:
Forty two ovariectomized female adult albino rats were utilized and divided into: Group I: received vehicle. Group II: received aluminum chloride to induce Alzheimer's disease. Group III: after the induction of Alzheimer's disease, each rat received single dose of exosomes then left for 4 weeks. The circumvallate papillae were prepared for examination by light and transmission electron microscope.

STATISTICAL ANALYSIS:
histomorphometric data were statistically analyzed.

RESULTS:
Histological examination of circumvallate papilla in Group I showed normal histological features. Group II revealed distorted features. Group III illustrated nearly normal histological features of circumvallate. Silver impregnation results showed apparently great number of heavily impregnated glossopharyngeal nerve fibers in both Groups I & III but markedly decreased in Group II. Synaptophysin-immunoreactivity was strong in Group I, mild in Group II and moderate in Group III. The ultra-structural examination of taste bud cells revealed normal features in Group I, distorted features in Group II and almost normal features in Group III. Statistically highest mean of Synaptophysin-immunoreactivity area% was for Group I, followed by Group III, and the least value was for Group II.

CONCLUSIONS:
Alzheimer's disease has degenerative effects. Bone marrow mesenchymal stem cell (BM-MSC)-derived exosomes have the ability to improve the destructive changes induced by Alzheimer's disease.

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