

MSC Derived exosomes for treating Autism (Ramot)

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THE NEED

Autism spectrum disorder (ASD) is a neurodevelopmental disease with increasing rates among children every year (one out of 86 babies) . ASD is characterized by three core symptoms: social interaction deficits, cognitive inflexibility and communication disorders. Currently there is no effective treatment that can alleviate the core symptoms of the disorder.

TECHNOLOGY

We have previously shown that transplantation of human mesenchymal stem cells (MSC) to the lateral ventricles of BTBR mice can benefit autistic like behaviors of this model such as increasing male to male social interaction, decreasing repetitive behaviors of grooming and digging and decrease cognitive inflexibility (Segal-Gavish et al 2015).

We explored this study and demonstrate that intra-nasal delivery of exosomes derived from human MSC markedly improve symptoms in mice model of ASD. Intra-nasal treatment recovers the communication, social interaction, reduction in repetitive behaviors of self-grooming and digging and maternal behaviors of pup retrieval.

POTENTIAL APPLICATION

Autism spectrum disorder (ASD) and other neurodevelopmental diseases
Neurodegenerative diseases and Stroke

ADVANTAGES

- Noninvasive intranasal administration of the exosomes.
- Exosomes penetrate the blood brain barrier
- Low immunogenicity, allogeneic transplantation, Off theshelf product
- Easy to isolate and produce

PATENTS

Title of Provisional application filed: Mesenchymal Cell-Derived Exosomes to Treat Neurodegenerative and Neuropsychiatric Disorders

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