

Reference Library

Exosomes in Parkinson's Disease

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1. Yuan L, Li JY. Exosomes in Parkinson's Disease: Current Perspectives and Future Challenges. ACS Chem Neurosci. 2019 Feb 20;10(2):964-972. doi: 10.1021/acchemneuro.8b00469. Epub 2019 Feb 1. PubMed PMID: 30664350.

ACS Chemical Neuroscience

Review

Table 1. Differential miRNA Expression in Exosomes Derived from the CSF of PD Patients⁷⁴

upregulation	downregulation
hsa-mir-103a, hsa-mir-30b, hsa-mir-16-2, hsa-mir-26a, hsa-mir-331-5p, hsa-mir-153, hsa-mir-132-5p, hsa-mir-485-5p, hsa-mir-127-3p, hsa-mir-409-3p, hsa-mir-433, hsa-mir-370, hsa-let-7g-3p, hsa-mir-873-3p, hsa-mir-136-3p, hsa-mir-10a-5p	hsa-mir-1, hsa-mir-22, hsa-mir-29, hsa-mir-374, hsa-mir-119a, hsa-mir-126, hsa-mir-151, hsa-mir-28, hsa-mir-301a, hsa-mir-19b-3p, hsa-mir-29c

2. Osorio-Querejeta I, Alberro A, Muñoz-Culla M, Mäger I, Otaegui D. Therapeutic Potential of Extracellular Vesicles for Demyelinating Diseases; Challenges and Opportunities. Front Mol Neurosci. 2018;11:434. Published 2018 Nov 23. doi:10.3389/fnmol.2018.00434

TABLE 1 | Summary of therapeutic potential of EVs for demyelinating diseases.

Reference	EVs type	EVs Source	Isolation method	Principal experiment	Route of administration	Result
Williams et al., 2013	Exosomes	Virgin and pregnant mice serum	Ultracentrifugation	EAE	Intravenous	Stabilised EAE suppression.
Rajan et al., 2016	Exosomes	HPLSC culture supernatant	ExoQuick TC	EAE	Intravenous	Immunomodulation of EAE.
Zhuang et al., 2011	Exosomes	Glioblastoma culture supernatant	Sequential centrifugation steps	EAE	Intranasal	EAE inhibition.
Frühbeis et al., 2013a	Exosomes	Ol-Neu cultures supernatant	Sequential centrifugation steps	Oligodendrocyte-neuron co-culture	N/A	Exosomes mediated communication.
Krämer-Albers et al., 2007	Exosomes	Primary oligodendrocytes culture supernatant	Ultracentrifugation	Oligodendrocyte culture	N/A	Exosomes contain PLP, MBP, MOG and CNP.
Bakhti et al., 2011	Exosomes	Primary oligodendrocytes culture supernatant	Sequential centrifugation steps	Oligodendrocyte culture	N/A	Oligodendrocytes derived exosomes inhibit OPC differentiation.
Kurachi et al., 2016	Extracellular vesicles	MVECs culture supernatant	ExoQuick TC	Oligodendrocyte Precursor cell culture	N/A	OPCs survival, proliferation and motility.
Otero-Ortega et al., 2017	Exosomes	MSC culture supernatant	miRCURY Exosomes Isolation Kit	Subcortical ischemic stroke	Intravenous	Promotion of oligodendrocyte formation and remyelination.
Pusic and Kraig, 2014	Exosomes	Youth and Environmental Enriched rat serum	ExoQuick TC	Old rats	Intranasal	Enhanced myelin content.
Pusic et al., 2016	Exosomes	Environmental Enriched rat serum	ExoQuick TC	Demyelination hippocampal slice culture	N/A	Myelination increased and oxidative stress reduced.
Doepfner et al., 2015	Extracellular vesicles	MSC culture supernatant	PEG precipitation method	Ischemic stroke	Intravenous	Neuroprotection and neuroregeneration.
Drommelschmidt et al., 2017	Extracellular vesicles	MSC culture supernatant	PEG precipitation method	Perinatal brain induced inflammation	Intraperitoneal	Immunomodulation and reduction of micro- and astrogliosis.

3. Chang YH, Wu KC, Harn HJ, Lin SZ, Ding DC. Exosomes and Stem Cells in Degenerative Disease Diagnosis and Therapy. *Cell Transplant.* 2018 Mar;27(3):349-363. doi: 10.1177/0963689717723636. Epub 2018 Apr 25. Review. PubMed PMID: 29692195; PubMed Central PMCID: PMC6038041.

“Exosomes carrying catalase exerted substantial neuroprotective effects on in vitro and in vivo models of PD”¹⁸⁴.