Review Life Sci. 2024 May 26:350:122743. doi: 10.1016/j.lfs.2024.122743. Online ahead of print.

Exosomes: Their role in the diagnosis, progression, metastasis, and treatment of glioblastoma

S N Mousavikia [1], L Darvish [2], M T Bahreyni Toossi [3], H Azimian [4]

Affiliations

PMID: 38806071 DOI: 10.1016/j.lfs.2024.122743

Abstract

Exosomes are crucial for the growth and spread of glioblastomas, an aggressive form of brain cancer. These tiny vesicles play a crucial role in the activation of signaling pathways and intercellular communication. They can also transfer a variety of biomolecules such as proteins, lipids and nucleic acids from donor to recipient cells. Exosomes can influence the immune response by regulating the activity of immune cells, and they are crucial for the growth and metastasis of glioblastoma cells. In addition, exosomes contribute to drug resistance during treatment, which is a major obstacle in the treatment of glioblastoma. By studying them, the diagnosis and prognosis of glioblastoma can be improved. Due to their high biocompatibility and lack of toxicity, they have become an attractive option for drug delivery. The development of exosomes as carriers of specific therapeutic agents could overcome some of the obstacles to effective treatment of glioblastoma. In this review, we address the potential of exosomes for the treatment of glioblastoma and show how they can be modified for this purpose.

Keywords: Diagnosis; Drug delivery; Exosomes; Glioblastoma; Immunotherapy; Radiotherapy.