

عنوان مقاله:

Preparation and Characterization of Platelet-Derived Exosomes, as a Nanostructure for bio-compound delivery

محل انتشار:

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خلاصه مقاله:

Objective(s): Exosomes are extracellular vesicles (EV), which are released from the endosomal membrane of the cells. They are ۳۰-۱۲۰ nm in size, and carry many biological substances such as protein, lipids, and RNA. All kinds of cells release exosomes during their life. Exosomes are a small showcase of the mother cell's contents. Platelets-derived exosomes (Exo-Plt) are the most frequent nanoscale particles in the peripheral blood. Their availability and non-toxicity as an autologous carrier and a growth factor cargo made us introduce the most efficient method to isolate exosomes from platelet products and also examine their ability as a delivery system. **Materials and Methods:** Two different protocols including stimulated and unstimulated were used in the present study to obtain Exo-Plt. Dynamic light scattering (DLS), BCA assay, Transmission Electron microscopy (TEM), and western blotting were performed to assess the basic characteristics (size and zeta potential, protein content, morphology, and CD markers, respectively) of the isolated particles. Consequently, the ability of Exo-plts for delivery of exogenous miRNA into the model cell line was assessed by Real-Time PCR. **Results:** The stimulated method was more efficient to isolate Exo-Plt. Additionally, the applied agonist and the time of sample preparation from individuals affected the exosome yield. The Exo-Plts prosperously delivered the exogenous cargo into the cell line. **Conclusion:** This research provided a standard protocol to isolate high-quality and pure Exo-Plt for bio-compound delivery and even therapeutic objectives. Exosomes provide the opportunity for cell-free therapy.

کلمات کلیدی:

Drug delivery systems, Extra cellular vesicles, Platelet rich plasma, Transmission electron microscopy

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