

عنوان مقاله:

Characterization and Comparison of Mesenchymal Stem Cell-Derived Exosome Isolation Methods using Culture Supernatant

محل انتشار:

مجله آرشیو رازی، دوره 77، شماره 4 (سال: 1401)

تعداد صفحات اصل مقاله: 6

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خلاصه مقاله:

Exosomes are extracellular endosomal nanoparticles, which are formed under complex processes during the formation of multivesicular bodies. They are also achieved from conditioned media of a variety of cell types, especially mesenchymal stem cells (MSCs). Exosomes can modulate intracellular physiological actions via signaling molecules on the surface or secretion of components to the extracellular spaces. Furthermore, they are potentially used as crucial agents for cell-free therapy; however, their isolation and characterization can be challenging. In the current study, two methods of exosome isolation have been characterized and compared using a culture media of adipose-derived mesenchymal stem cells, namely ultracentrifugation and a commercial kit; moreover, the efficiency of these two methods was highlighted in this study. Two different isolation methods of exosomes from MSCs were used to compare the efficiency of exosomes. For both isolation methods, transmission electron microscopy, dynamic light scattering (DLS), and bicinchoninic acid (BCA) assay have been performed. The electron microscopy and DLS indicated the presence of exosomes. Moreover, the kit and ultracentrifugation isolates contained approximately comparable amounts of protein measured by the BCA. Overall, the two isolation methods had similar performances. Although ultracentrifugation is used as a gold standard for exosome isolation, the commercial kit has some advantages and can be applied alternatively according to its cost-effectiveness and time-saving properties.

کلمات کلیدی:

commercial kit, Exosome, isolation method, transmission electron microscopy, ultracentrifugation

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