

Age-dependent change in size distribution of plasma sEV from Wistar rat

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Small extracellular vesicles (sEV) are lipid-bilayer-capsuled particles with a 50-150 nm diameter. They contain various molecules, such as proteins, lipids, nucleic acids, and metabolites. sEV affect cellular function via signal transduction through binding to cell surface receptors or delivering contents by phagocytosis, pinocytosis or membrane fusion. Therefore, sEV are recognized mediating cell-to-cell communication. Recent studies suggest that sEV play a key role during various disease states. However, little is known about changes in sEVs characters by aging. We then aimed to compare the size distribution of plasma sEV from young and aged Wistar rats. We isolated sEV from plasma of male Wistar rats (6- and 15-week-old; 6w-sEV and 15w-sEV) by polyethylene glycol precipitation and ultracentrifuge method. sEV particle distribution was measured by a tunable resistive pulse sensing method. Mean diameter in 15w-sEV was higher than 6w-sEV. Particles with less than 150 nm of diameter in 15w-sEV were lower than 6w-sEV. The present study for the first time revealed that the size of plasma sEV in Wistar rat increases by aging. Further studies are needed in order to clarify physiological significance of the increase in particle diameter by aging.