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Salvianolic Acid B Increases Recombinant Adeno-associated Virus Transduction through Redirecting Trafficking Pathways and Stabilizing Perinuclear Accumulations

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Recombinant adeno-associated virus (rAAV) has been established as a powerful tool for in vivo gene transfer and achieved much promise in gene therapy applications. However, widespread clinical use has been limited by transduction efficiency. In the current study, we screened a panel of small molecule compound from Traditional Chinese Medicine focused on AAV intracellular trafficking process and found salvianolic acid B can significantly enhance rAAV2 transduction. Salvianolic acid B caused a dose-dependent increase in rAAV2 transduction regardless of vector dose, genome architecture, and over a broad range of cell line from various cell type and species (e.g. HEK293, Hela, HepG2, Huh-7, CHO-K1, LO-2). Salvianolic acid B treatment redirected rAAV2 particles toward large vesicles positive for late endosomal (Rab7) and lysosomal (LAMP1) markers. Furthermore, salvianolic acid B acted to increase accumulation of viral particles at the perinuclear region. In summary, our results suggest that salvianolic acid B redirects rAAV2 toward more productive trafficking pathways and stabilizes perinuclear accumulations of vectors, facilitating productive nuclear trafficking.