

Inside Creative Biolabs' Quest to Develop Plant-Derived Exosomes for Skin Repair

Creative Biolabs is dedicated to isolating and functionally validating exosomes derived from three medicinal plants: rose, aloe, and Centella asiatica.

SHIRLEY, NY, UNITED STATES, October 24, 2025 /EINPresswire.com/ -- In recent years, plant-derived exosomes (PDEs), as natural nanoscale vesicle systems, have become a new interest for dermatology and pharmaceutical research, known as the active cellular mechanisms of traditional medicinal plants. Rose, aloe, and Centella asiatica hold significant potential to explore from this new perspective.

Rose: From Fragrant Molecules to Cellular Signals

[Exosomes derived from roses](#) have shown strong antioxidant and anti-inflammatory properties. They can induce keratinocyte migration and up-regulate protein expression of skin barrier proteins; combined with exosome delivery, they offer a potential new approach to chronic skin aging and other inflammatory skin diseases.

Dealing with the isolation of exosomes from rose biomass, Creative Biolabs develops standardized workflows. Concurrently, methods to ensure exosomes retain their structures include ultracentrifugation with density gradient purification. The team employs NTA and TEM for morphological validation and UPLC-MS/MS for the quantification of phenolic and volatile constituents. Reliable data from these methods help investigate the anti-inflammatory mechanisms of rose exosomes.

One of the exosome research scientists at Creative Biolabs stated, "Our focus goes beyond isolating exosomes; we also aim to trace their molecular cargo and functional patterns. This



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helps us uncover how plant-derived molecules genuinely act within the skin microenvironment."

Aloe: A Molecular Extension of Traditional Medicine

[Aloe-derived exosomes](#) (ADEs) are rich in polysaccharides, amino acids, and antioxidant compounds, which can be stably delivered to recipient cells through their vesicular structure. Exosomes also alter the synthesis of collagen in dermal fibroblasts and exhibit cytoprotection during UV-induced stress.

Creative Biolabs aids aloe-related research by employing bioactivity measurement and cell-based functional assays. For instance, researchers can assess exosome stability by zeta potential and particle size distribution and then validate antioxidant and restorative capacity using ROS scavenging and cell migration models. This integrated workflow—from physicochemical profiling to cellular validation—marks a considerable advancement in plant pharmacology.

Centella asiatica: A Natural Carrier for Triterpenes

Recognized for its wound healing and anti-inflammatory effects, *Centella asiatica* exosomes are also effective at encapsulating triterpenoid compounds such as asiaticoside and madecassoside. These vesicles can promote fibroblast migration and enhance skin barrier recovery in vitro.

Creative Biolabs employs a combination of continuous ultracentrifugation and microfiltration to achieve high-purity vesicle extraction. Subsequent qPCR and Bioanalyzer analyses are used to assess exosomal RNA distribution, aiding in the exploration of their potential signaling roles. The team has also developed in vitro wound-healing assays to evaluate the effects of [Centella exosomes on cell repair](#) rate and collagen deposition—providing a tool to understand the delivery mechanisms of natural triterpenes.

"We see minor structural differences in the exosomes, which are likely to impact their functions," the scientist added. "Future systematic study on exosomes from *Centella* and other medicinal plants could elucidate the biological logic behind natural bioactive molecules."

About

Creative Biolabs offers complete technical assistance to investigate exosomes from plants. The company provides the necessary technology and standardized protocols, allowing scientists to investigate the molecular basis of natural therapeutics.

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