

# AnteAGE MDX® Stability

## Transition from Cold to Room Temperature Shipping for Exosomes

At AnteAGE, we are committed to delivering excellence to our customers. We are excited to announce a transition from cold to room temperature shipping for our exosomes, a move backed by data-driven improvements and aimed at providing you with a more efficient and convenient experience.

Lyophilization, or freeze-drying, of exosomes is a widely adopted method for their preservation at room temperature due to its ability to mitigate degradation and enhance stability. This process involves removing water from the exosome suspension, thereby preventing ice crystal formation that could damage the delicate structures of exosomes [1]. Lyophilization of exosomes is often coupled with the use of cryoprotectants, such as trehalose, to further enhance stability. Trehalose, a disaccharide known for its ability to protect biological structures during dehydration and freezing, acts as a stabilizing agent during the lyophilization process. It helps prevent the formation of ice crystals, which can be detrimental to the structural integrity of exosomes, by forming a glass-like matrix around them [2, 3]. Lyophilization also reduces the potential for chemical reactions and enzymatic degradation during storage [4]. Several studies highlight the effectiveness of lyophilization in maintaining exosome integrity and functionality at ambient temperatures [2-5]. Additionally, lyophilized exosomes exhibit prolonged shelf life and enhanced resistance to temperature fluctuations, facilitating ease of transport and storage in diverse settings.

Thus, the combination of lyophilization and trehalose as a cryoprotectant emerges as a robust strategy for achieving room temperature storage of exosomes while preserving their biological properties.

(1) Trenkenschuh, E., et al., Enhancing the Stabilization Potential of Lyophilization for Extracellular Vesicles. *Advanced Healthcare Materials*, 2022. 11(5): p. 2100538.

(2) Bosch, S., et al., Trehalose prevents aggregation of exosomes and cryodamage. *Scientific Reports*, 2016. 6(1): p. 36162.

(3) Jeyaram, A. and S.M. Jay, Preservation and Storage Stability of Extracellular Vesicles for Therapeutic Applications. *Aaps j*, 2017. 20(1): p. 1.

(4) Budgude, P., V. Kale, and A. Vaidya, Cryopreservation of mesenchymal stromal cell-derived extracellular vesicles using trehalose maintains their ability to expand hematopoietic stem cells in vitro. *Cryobiology*, 2021. 98: p. 152-163.

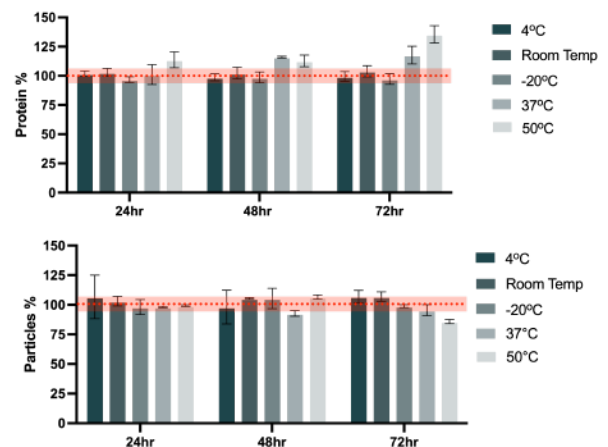
(5) Lyu, N., et al., Stability and Function of Extracellular Vesicles Derived from Immortalized Human Corneal Stromal Stem Cells: A Proof of Concept Study. *The AAPS Journal*, 2022. 25(1): p. 8.

## Key Reasons for the Change

### 1. Enhanced Viability and Integrity:

As a data driven company, AnteAGE relies on comprehensive analysis and evidence to guide every decision. Our recent data analysis affirms that exposing exosomes to temperatures (25°C, 37°C, 50°C) for 24, 48 or 72 hours has no significant impact on protein concentration (Fig. 1a) or on integrity and viability (Fig. 1b), ensuring optimal efficacy during transit. After 72 hours at 50°C, signs of damage to exosomes are apparent as determined by the increase in protein concentration (proteins from inside the exosomes are being released) and decrease in particle concentration. Data within the red box demonstrates no significant differences.

Figures 1A & 1B:



## 2. Mitigating Freezing Risks:

Cold shipping poses the risk of vials freezing (and sometimes breaking), potentially compromising the product. Room temperature shipping eliminates this risk, ensuring your exosomes arrive intact.

## 3. Consistent Stability and Efficiency:

This change maintains the stability and efficiency of our exosomes, providing you with the same high-quality results.

### Additional Advantages

## 4. Next Day Shipping:

Enjoy faster delivery with our next day shipping option, ensuring that your exosomes reach you promptly for a seamless experience.

### Quality Assurance Measures

## 5. Continuous Monitoring:

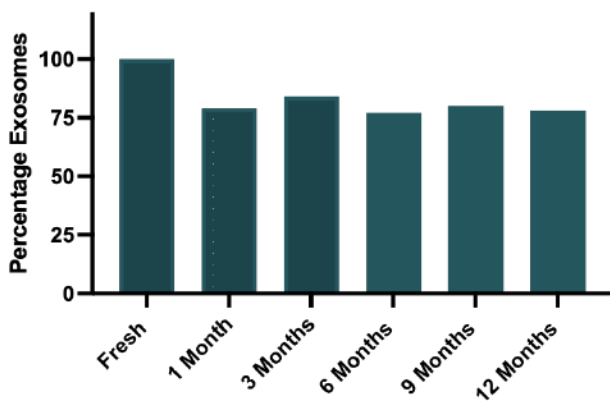
We continually monitor the viability and shelf life of our products, ensuring that you receive exosomes of the highest quality with every order.

### Customer Guidance

## Storage Instructions:

Upon receiving your package, store your exosomes at 4°C according to our standard storage guidelines. This step ensures optimal product quality and maximal shelf life. With appropriate storage, each vial of AnteAGE MDX contains over 10 billion intact and viable exosomes (Fig. 2).

Figure 2:



### Transparency and Communication

Our commitment to transparency means we are always here to address any questions or concerns. Contact our customer support team for assistance.

[customerservice@AnteAGE.com](mailto:customerservice@AnteAGE.com)

At AnteAGE, your satisfaction is our priority. The transition to room temperature shipping reflects our dedication to providing you with top-tier exosome products quickly, efficiently, and with the same unwavering commitment to quality.

Thank you for choosing AnteAGE.