Reconstitution & Storage Guidelines

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Overview

Lyophilized peptides are highly stable when stored dry at low temperature, but become significantly more sensitive to heat, light, and proteolytic activity once reconstituted. Following the guidelines below preserves identity and purity throughout the working life of the vial.

Storage of Lyophilized Material

Unopened vials should be stored at -20 °C or below in their original sealed packaging. At -20 °C, lyophilized peptides typically retain ≥98% of their original potency for 24 months. Avoid repeated temperature cycling: when removing a vial from the freezer, allow it to equilibrate to room temperature for 20–30 minutes before opening to prevent moisture condensation on the lyophilized cake.

Reconstitution Solvent

Peptide character	Recommended solvent
Hydrophilic, neutral	Sterile water or 0.9% saline
Acidic (pI < 5)	Dilute ammonium bicarbonate (10 mM)
Basic (pI > 8)	Dilute acetic acid (10 mM)
Hydrophobic	DMSO, then dilute into aqueous buffer

Reconstitution Procedure

Bring the vial and the chosen solvent to room temperature. Add solvent slowly down the inner wall of the vial — do not direct the stream onto the lyophilized cake, which can cause foaming and denaturation. Allow the vial to stand for 2–5 minutes, then gently swirl until fully dissolved. Avoid vortexing for prolonged periods.

Aliquoting & Working Stocks

For projects requiring repeated use, prepare single-use aliquots immediately after reconstitution and freeze at -80 °C. Each freeze–thaw cycle measurably degrades many peptides; a maximum of three cycles is recommended.

Working Solution Stability

Reconstituted solutions stored at 4 °C are typically stable for up to 7 days; at -20 °C for up to 30 days; at -80 °C for up to 6 months. Some sequences (notably those containing methionine, cysteine, or tryptophan) are more sensitive and should be used within shorter intervals.

Quality Tip

For critical work, run a brief HPLC purity check on a stored aliquot before key experiments. A small drop in main-peak area or the appearance of new peaks is the earliest indicator of degradation.

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