PEPTIDE SOLUBILITY GUIDELINES

Proper peptide solubilization is one of the most important factors in a successful peptide assay. Improper peptide solubilization results in inaccurate peptide concentration calculations, which can introduce experimental error into data or result in experimental failure. However, finding the ideal solvent in which to dissolve your peptide is often a challenge. The steps outlined below guide you through the process for determining the best solvent for maximum solubility of your custom peptide. It is best to test your peptide's solubility by first using a minute amount of peptide. Distilled, sterile water should be tried as a solvent first, especially when the peptide has less than five residues. For other peptides, optimum conditions for peptide solubility are based on the peptide sequence.

Reconstituting Your Peptide

1 Calculate the length of the peptide. Generally, for those less than 6 amino acids, the peptide can dissolve in pure water. For those with more than 6 amino acids, the principle for dissolving the peptide can be deduced according to its overall charge and the degree of hydrophobicity.

2 Assign a value of -1 to acidic residues, which include Asp (D), Glu (E), and the C-terminal (-COOH). Assign a value of +1 to basic residues, which include Arg (R), Lys (K), His (H), and the N-terminal ($-NH_2$). Calculate the overall charge of the entire peptide.

Scenario 1: The overall charge is negative:

Option 1-1: First, try dissolving the peptide in water.

Option 1-2: If water fails, add NH_4OH (< 50 µl) and then dilute the peptide solution to the desired concentration. If the peptide contains Cys, do not use NH_4OH. Try the alternative method listed below.

Option 1-3: If the peptide still does not dissolve, add DMSO (50-100 µl) to solubilize the peptide and then dilute the peptide solution to the desired concentration.

Scenario 2: The overall charge is positive:

Option 2-1: First, try dissolving the peptide in water.

Option 2-2: If water fails, try dissolving the peptide in a 10%-30% acetic acid solution.

Option 2-3: If the peptide still does not dissolve, try dissolving the peptide in a small amount of DMSO, and then dilute the peptide solution to the desired concentration.

Scenario 3: The overall charge is neutral:

Peptides having an overall charge of zero usually dissolve best in an organic solvent. First, try adding acetonitrile, methanol, etc. For very hydrophobic peptides, try dissolving the peptide in a small amount of DMSO, and then dilute the solution with water to the desired concentration.

Want to make reconstitution even easier? Request a solubility test when you request a quote for your custom peptides by checking the Free Solubility Test box.

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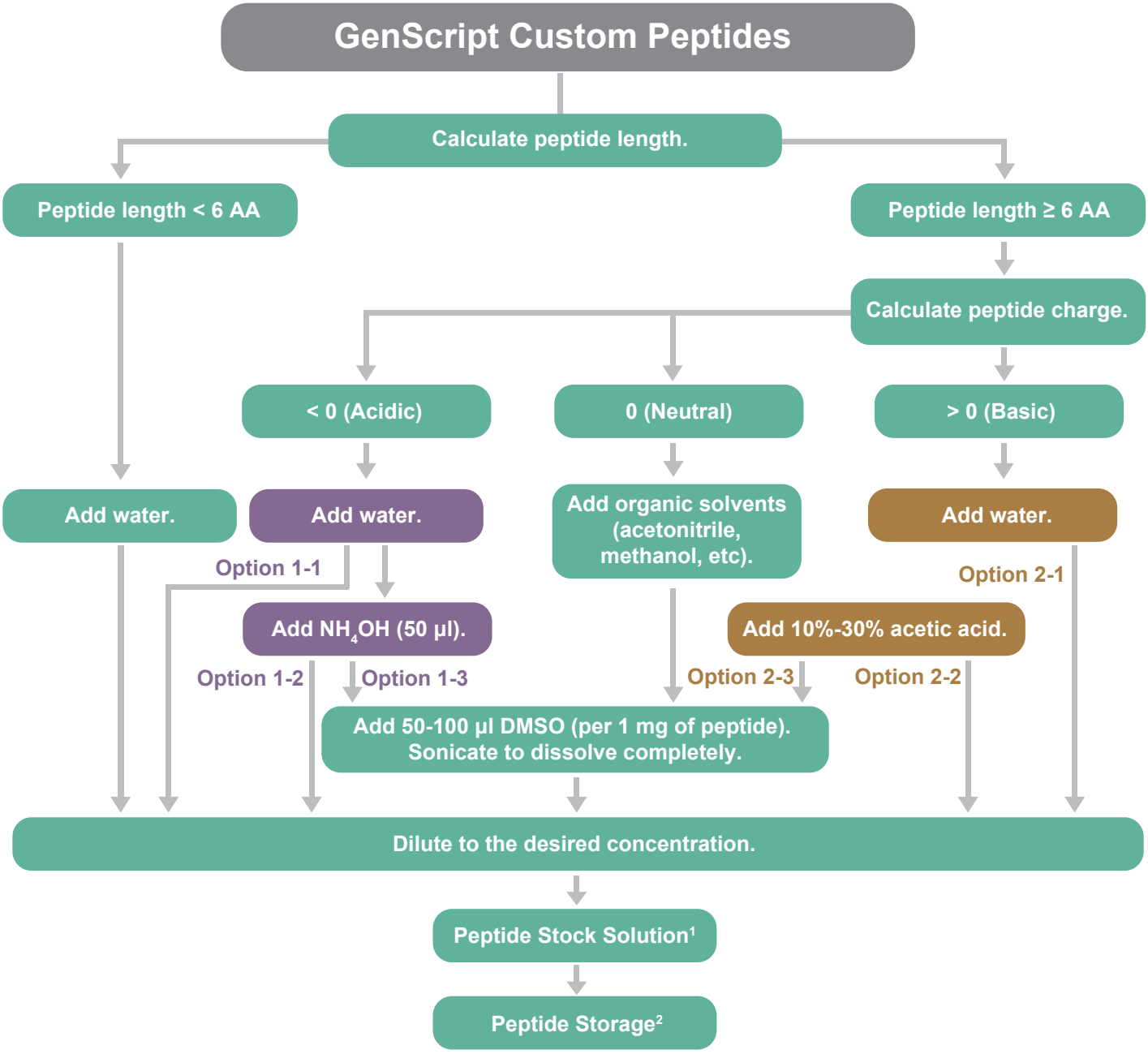
RECONSTITUTION INSTRUCTIONS



Notes:

[1] It is recommended that the concentration of the stock solution be around 1-2 mg of peptide per mL of solution. This is dilute enough so that relatively small volumes (< 100 µL) of peptide can be used in an assay; minimizing the effect of the solvents initially used for solubilization.

[2] The stability of each peptide depends on its sequence information. We suggest storing lyophilized peptides at -20 °C. Once in solution we recommend that you aliquot your peptide into tubes and store at -80 °C. It is recommended that peptides containing methionine, cysteine, or tryptophan residues be stored in an oxygen-free atmosphere to avoid oxidation.

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