Guidelines for Dissolving Peptides

Finding the ideal peptide solubility for a given research process is a serious challenge since improper solubilization can result in loss of peptide or failure of the experiment. **The steps outlined below provides you with a method to perform a solubility test for determining the best solvent for a synthetic peptide. It is best to test it by dissolving a minute amount of peptide, rather than the entire sample.**

As a general rule, peptides should first be dissolved in distilled, sterile water, particularly peptides of fewer than five residues. For individual peptides, conditions are chosen for optimum solubility based on the given peptide sequence.

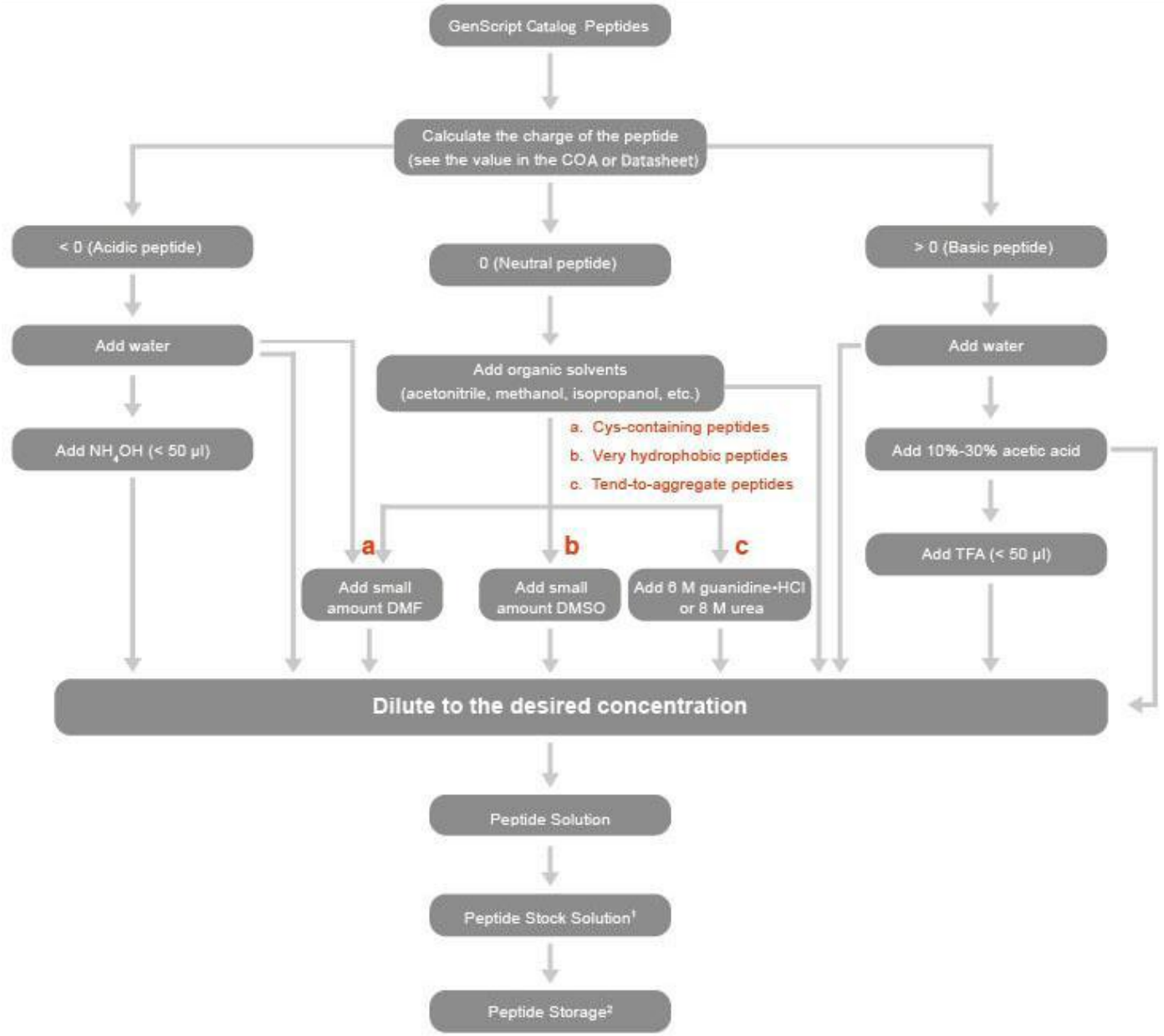
Before dissolving your peptide, please read the recommendations below and perform a solubility test.

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

- If the overall charge of the peptide is positive, try to dissolve the peptide in water. If the peptide cannot be dissolved, try 10% to 30% acetic acid solution. If the peptide still does not dissolve, add TFA (< 50 µl) to solubilize the peptide and dilute to the desired concentration.

- If the overall charge of the peptide is negative, try to dissolve the peptide in water. If the peptide does not dissolve, add NH_4OH (< 50 µl) and dilute to the desired concentration. If the peptide contains Cys, then do not use basic solutions to dissolve it. Try the method listed below.

- If the overall charge of the peptide is zero, you need to add some organic solvents. At first, try to add some acetonitrile, methanol, or isopropanol. For very hydrophobic peptides, try dissolving the peptide in a very small amount of DMSO, and dilute with water to the desired concentration. For Cys-containing peptides, use DMF instead of DMSO. For peptides that tend to aggregate, add 6 M guanidine•HCl or 8 M urea, and then proceed with the necessary dilutions.



Note:

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 to minimize the potential precipitation of the peptides during storage, but concentrated enough to take relatively small volumes (< 100 µl) of aliquots for the assay, and therefore minimizing the effect of the solvents initially used for solubilization.

2. Stability of peptides have no uniform standards. The stability of each peptide depends on its sequence information. We suggest Lyophilized peptides should be stored at -20 °C. It is recommended that peptides containing methionine, cysteine, or tryptophan residues be stored in oxygen-free atmosphere to avoid oxidation.

3. This guideline is used for catalog peptides whose solubility conditions are not listed.