Best Practices for Reconstitution of USP Peptide Reference Standards

USP Reference Standards (RS) are developed through a robust and stringent quality control process to help manufacturers ensure the purity and quality of the biologics. This rigorous process involves multi-lab testing and collaboration with multiple partners within and outside USP.

The peptide RS is generally supplied in small quantities in single-use vials, depending on the procedure requirements as defined in monograph.

Instructions for use are given either on the label or USP Certificate or in the monographs where the standard is referenced.
(Ref.: GC<11> USP REFERENCE STANDARDS).

Some single-use peptide RS may be lyophilized with content labelled in mass or activity units per container.

If labelled, the vial's content must be reconstituted in its entirety without any additional weighing.

It has been observed that improper handling and variations in the reconstitution process can lead to inconsistent results. This variation should be assessed during method development, managed by an appropriate control strategy, and then validated in each lab.

1

Equilibrate the RS vial to ambient temperature before opening the vial to avoid condensation of atmospheric moisture onto the peptides.

2

Tap the intact stoppered vial in the upright position

In the course of the material transit, there are chances of the vial contents being stuck to the stopper. It is always a good practice to allow the vial to reach room temperature and gently tap the intact stoppered vial in the upright position on the workbench to bring the entire vial contents to the bottom of the vial.

3

Open the vial carefully and gently

Carefully open the stopper in a low airflow area to avoid losing any material from the vial, cap, or rim as forced air could blow the contents stuck to the stopper or particulate contents located at the neck of the vial.

Make sure to place the stopper upside down on a clean workbench. Refrain from placing the stopper in the upright position to avoid the loss of lyophilized residual content on the stopper and to keep away the vial contents from cross-contamination

4

Add the defined quantity of Mobile phase/ Diluent/Water as specified in the USP monograph or RS certificate to the vial.

Replace the stopper on to the vial immediately and allow it to dissolve by keeping it aside for a couple of minutes.

5

Mix gently. Then tap the vial or spin it.

Gently mixing the sample is the KEY during the entire sample handling process. Invert, swirl and mix gently by holding the stopper tightly to obtain a reconstituted solution.

After mixing, tap the vial or spin it (if feasible) to bring the content down, making sure the liquid comes down to the bottom and does not remain stuck to the cap, to avoid losing volume.

6

Transfer the entire content to a volumetric flask or suitable vial depending on the total reconstitution volume.

It is recommended to use a transfer pipette or other similar disposable pipette to transfer the solution. The solution is never poured.

7

If necessary, washing steps can be performed in a similar manner by carefully adding, mixing, and transferring the content by a pipette

It is up to the analyst to make a sound judgment regarding how efficiently the content is transferred during reconstitution and if further washing is necessary

If the total reconstitution volume is small, only one rinse may be sufficient; if the volume is large, rinsing twice may be appropriate.

During the washing steps, the stopper/cap is also washed in the same way so that any material sticking to the stopper/cap is included (even if nothing is visible).

8

Each RS vial is handled in the same manner to ensure consistency.

This is very important and should be assessed during method development and managed by an appropriate control strategy to ensure acceptable intermediate precision is achieved and then validated. The established procedure must be followed in an identical manner for all RS vials.