



VITANATIV

Lyophilized Collagen Powder Re-solubilization Instructions and Instructions for Use

To re-solubilize the lyophilized powder:

- 1) Determine the desired volume of the bioink you wish to make (e.g., 2 mL)
- 2) Make a 0.05M solution of acetic acid equal to the desired volume (e.g., 2 mL)
- 3) Determine the desired collagen concentration for the bioink (e.g., 25 mg/mL)
- 4) Multiply the desired collagen concentration by the desired volume of the bioink to obtain the total mass of the lyophilized powder needed (e.g., 25 mg/mL * 2 mL = 50 mg). Using a scale, weigh out the needed mass of lyophilized powder and add it to the volume of 0.05M acetic acid. Note that at higher collagen concentrations, the solution will become more viscous and cloudy and 100% solubility may not be achieved at high concentrations (e.g., >30 mg/mL).
- 5) Use a vortex mixer to mix the powder and acid together until the powder solubilizes. This may take some time.
- 6) Centrifuge to remove bubbles (e.g., 1000 xg for 5 minutes at 4 deg C)
- 7) *Note: if you will be adding cells directly to the bioink, neutralize the pH of the bioink prior to adding the cells (2 mL of 25 mg/mL bioink will need ~10.5 μ L of 10 N NaOH to neutralize), this will increase the viscosity of the bioink and you may see some white collagen fibrils form in the bioink*

Instructions for Use

 **Caution:** Not for Human Use or Consumption.

PRODUCT DESCRIPTION

Vitanativ™ lyophilized soluble bioinks are intended for research use only for cell/tissue scaffolding, three-dimensional cell culture, and bioprinting applications.



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