WHAT IS CLAIMED IS:

1. A mixing apparatus for reconstituting a powdered cell culture media, the apparatus comprising:

at least one fluid chamber;

a first influent port at a lower portion of the fluid chamber;

a second influent flow port at a top portion of the at least one fluid chamber,

a first geometric fluid flow aid positioned in the fluid chamber, the first geometric fluid flow aid comprises a geometric shape having a constantly decreasing diameter in the direction towards the center of the fluid chamber and a flattened end portion;

an effluent port at the top of the fluid chamber;

wherein a powdered cell culture media is provided in the fluid to be mixed with a fluid provided by the influent port;

wherein the first and the second influent ports are tangentially oriented relative to an inner wall of the fluid chamber; and

wherein the effluent port is configured to allow reconstituted media to exit the fluid chamber.

2. The mixing apparatus of claim 1, further comprising a second geometric fluid flow aid, wherein: the first geometric fluid flow aid is positioned at a bottom of the fluid chamber and the second geometric fluid flow aid is positioned at the top of the fluid chamber.

3. The mixing apparatus of claim 2, wherein the first and the second geometric fluid flow aids are substantially cone-shaped.

4. The mixing apparatus of claim 1, wherein the at least one fluid chamber is a first fluid chamber and the mixing apparatus further comprises a second fluid chamber, the second fluid chamber positioned above the first fluid chamber, wherein the first and the second fluid chambers are axially aligned.

5. The mixing apparatus of claim 4, wherein the second fluid chamber is provided with an additive to be added to the reconstituted fluid once it exits the first chamber.

6. The mixing apparatus of claim 1, wherein the first and the second influent ports are positioned on the same vertical plane.

7. The mixing apparatus of claim 1, wherein the mixing apparatus is configured for single use.

8. The mixing apparatus of claim 1, wherein the ratio of the cross-sectional area of the first influent port (in square inches) to flow rate (liters/minute) is in the range of 0.0015 to 0.0040 (square inches with one liter per minute of fluid flow).

9. The mixing apparatus of claim 1, wherein a porous filter is used to keep the powdered cell culture media inside the fluid chamber until dissolved.

10. The mixing apparatus of claim 9, wherein the filter is made from porous polypropylene or polyethylene.

11. The mixing apparatus of claim 9, wherein the filter has a porosity in the range of 30 to 200 microns.

12. The mixing apparatus of claim 1, further comprising a hydrophobic vent filter between the effluent port and a sterilizing filter configured to allow air that is entrained in dissolved medium to vent.

13. The mixing apparatus of claim 1, further comprising a quick-connect devices at the influent port so that the quick-connect device prevents the egress of the powdered cell culture media powder from the cartridge during storage and shipment.

14. A method of reconstituting a powdered cell culture media, the method comprising:

providing a mixing apparatus having at least one fluid chamber, an influent port at a lower portion of the fluid chamber, a second influent flow port at a top portion of the at least one fluid chamber, a geometric fluid flow aid comprising a geometric shape having a constantly decreasing diameter in the direction towards the center of the fluid chamber and a

flattened end portion and positioned in the fluid chamber, and an effluent port at the top of the fluid chamber;

providing a powdered cell culture media to the fluid chamber, prior to introducing fluid to the chamber;

introducing fluid to the chamber through the influent port, wherein the influent port is tangentially oriented relative to an inner wall of the fluid chamber to thereby cause the fluid to follow the wall of the fluid chamber in a circular motion;

creating a vortex flow in the fluid chamber by introducing fluid at a sufficient flow rate;

enhancing the vortex flow with the geometric fluid flow aid by further channeling the water around the wall of the fluid chamber, around the geometric flow aid; and

continuing to introduce fluid to the chamber and collecting reconstituted fluid that exits the chamber through the effluent port.

15. The method of claim 14, wherein the mixing apparatus further comprises a second fluid chamber, the second fluid chamber being provided with a powdered additive substance, and wherein the fluid exits the first chamber and moves into the second chamber to reconstitute the additive substance.

16. The method of claim 14, further comprising:

decreasing the diameter of an exit at the effluent port, thereby increasing the pressure inside the chamber; and

returning the diameter to the normal diameter, thereby quickly decreasing the pressure inside the chamber, and causing a pulverization of clumps of powdered media in the fluid.

17. The method of claim 14, wherein the powdered cell culture media is formulated with the inclusion of sodium bicarbonate.