GEMINI BIO-PRODUCTS

BSA 101: Modern Bovine Serum Albumin

Albumin is one of the most extensively used proteins in biological research today. It acts as a powerful antioxidant in cell culture. It binds, sequesters and stabilizes a variety of molecular species which are often unstable. This acidic, soluble protein has both high-affinity and secondary binding sites, optimizing the roles that fatty acids, metals, disulfides, and other molecules play in cellular metabolism.

With all of the choices for bovine serum albumin (BSA) available, you may be wondering what the differences are and which product is right for your application.

How is BSA made?

BSA is separated from whole blood using a multi-step fractionation process. Dr. Edwin J. Cohn, a researcher at Harvard University, developed the original process in the 1940's.

Dr. Cohn found that the blood proteins could be separated from each other by manipulating the temperature and varying concentrations of an organic solvent. His process used these two variables to separate human blood plasma into five fractions, of which the fifth contains mostly albumin. This is why it was called "Fraction V".

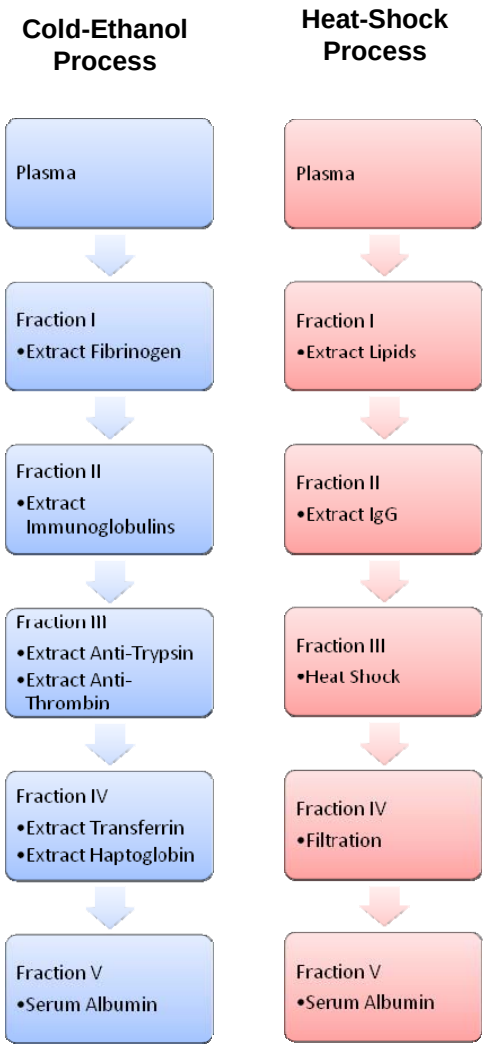
Today there are two alternative processes used to extract albumin from plasma; they are Cohn's cold-ethanol process and a heat-shock process.

What's the difference between "heat-shock" and "Cohn cold-ethanol" prepared BSA?

Most modern fractionation processes for BSA use heat, rather than organic solvents at several key steps. Ethanolic processes are somewhat dangerous, potentially harmful to the environment and use explosive, highly controlled organic solvents.

Cold-ethanol fractionation involves adding the solvent to bold plasma at different low temperatures until the albumin is precipitated out. This process can leave behind impurities and organic compounds that are less than ideal in BSA.

Heat-Shocked fractionation involves manipulation of temperature and filtration to separate the albumin from the other plasma components. This generally is a simpler process and yields a product of higher purity.



Which BSA is right for me?

Standard Grade
700-100P
- ✓ Use for bacterial culture or as a protein base.

Protease Free
700-101P
- ✓ Use as a non-specific blocking agent.

Cohn Fraction V
700-108P
- ✓ Use where “Cohn” is essential.

Low Endotoxin Grade
700-102P
- ✓ Use in cell culture.

Serum Replacement Grade
700-104P
- ✓ Use for serum-free and serum–reduced cell culture.

Low IgG
700-105P
- ✓ Use as a blocking reagent where IgG may interfere.

Molecular Biology Grade
700-106P
- ✓ Use for PCR

Fatty Acid Free
700-107P
- ✓ Use as a blocking reagent where serum fatty acids may interfere.

Low Electrolyte
700-109P
- ✓ Use as a stabilizer for EIA and RIA techniques where electrolyte levels are critical.

Gemini hopes that this information helps you better understand the BSA choices available to you today.