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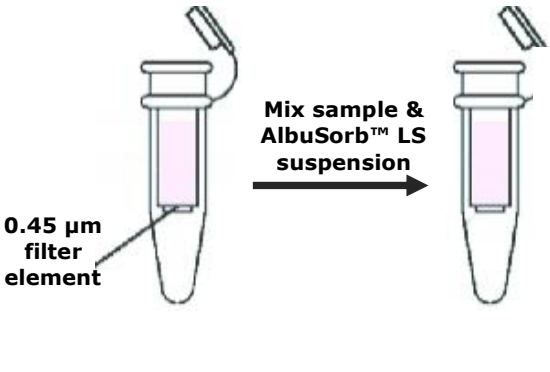
AlbuSorb™ LS

Suspension Reagent for Albumin Depletion From Serum or Plasma

- Removes 30 mg albumin/ml, >90%
- Affinity-type equivalence, virtually no cross-reactivity with other proteins
- Disposable, no column regeneration or cross-contamination
- Simpler alternative protocol to dry-bead AlbuSorb™ format
- Suitable for 96-well, high-throughput and automation
- Economical polymer technology, not based on blue-dye or immuno-affinity
- Mild binding conditions maintains tertiary structure and seamless transfer to secondary analysis
- The flow-through (unbound) fraction retains enzymatic and biological activity
- Species agnostic, including human, sheep, bovine, mouse, goat, rat, and calf.

Poly-electrolytes are polymers with repeating units of stationary charges. **AlbuSorb™ LS** comes from a class of solid-phase, elastomeric poly-electrolytyes that bind proteins through an empirically derived chemistry combining elements of polymer composition, cross-linking architecture and charge properties. Unlike immuno-affinity, the solid-phase utilized is disposable, eliminating cycle to cycle variance and cross-contamination. **AlbuSorb™ LS** is supplied as a liquid suspension, so no weighing; simply pipette, centrifuge and/or filter, and recover the albumin depleted serum/plasma in the unbound fraction.



Suspension formats can be processed in single filter-tube assemblies (above) or in microfuge tubes without filter assemblies. Both protocols are adaptable to 96-well formats and automation (right).

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Items	As a component of AlbuSorb™ Trial Kit Item No ALST485-10	Item No ALS385-25	Reagent
AlbuSorb™ LS	1 ml	2.5 ml	Supplied
Binding Buffer HB (0.05M K_2HPO_4 Dibasic, pH 6.5)	1 ml	2.5 ml	Supplied
Spin Filter assemblies	10	25	Supplied

AlbuSorb™ LS is purchased as a suspension reagent with the binding buffer, and spin-filter assemblies. Additional spin-Filter assemblies (low protein binding, 0.45 µm filter element) can be purchased as accessories; please inquire. For larger preps, centrifugation can also be used without the need for filters; bulk quantities of AlbuSorb™ LS can be purchased, please inquire.

Typical Performance	AlbuSorb™	AlbuSorb™ LS
Serum Sample Volume	25 µl	25 µl
Albumin Removal	>90%	>90%
Recovered Protein Mass	500-600 µg (Albumin depleted)	500-600 µg (Albumin depleted)
LC-MS/MS unique proteins (single 3 hr gradient)	350-400	350-400

Sample Type	Disease	Analysis
Rat serum	Cancer	MALDI
Rat serum	Diabetes	Western Blot
Human Synovial fluid	Rheumatoid Arthritis	2DE
Human Urine Exosomes	Diabetes	LC-MS/MS SRM

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Specification

AlbuSorb™ LS is supplied as an aqueous suspension of a synthetic polymer, pH 6.5. After centrifugation, the ratio of liquid to gel pellet is about 2 parts liquid, to 1 part pellet.

Storage

Supplied as an aqueous suspension of synthetic polymer, pH 6.5. The reagent when not used must be kept sealed and stored at 4°C. Do not freeze. **AlbuSorb™ LS** retains full activity when stored at 4°C for 6 months. Expiration date is shown on label.

PROTOCOL – To Treat 25 µl of serum or plasma in Spin-Filter Tubes

1. Shake the **AlbuSorb™ LS** suspension.
2. Using wide-bore pipette tips, pipette 100 µl of the **AlbuSorb™ LS** suspension into the filter of the Spin-Filter tube set.
3. Add 100 µl of **Binding Buffer HB** to the **AlbuSorb™ LS** suspension
4. Add 25 µl of the serum or plasma.
5. Pipette the suspension up and down 5 times to mix the suspension and the sample.
6. Mix by inversion or vortexing for 10 minutes.
7. Centrifuge for 1-2 minutes at 9000 RPMs (8,000xg). Filtrate contains Albumin depleted sample suitable for further analysis, while the retained material contains the Albumin removed.

Note – when observing proteins on SDS-PAGE (4-15%), other proteins migrate to the same region as Albumin, and may not be fully resolved.

Optionally the pellet **(mostly albumin)** can be eluted with 200 µl of **0.2M Tris + 0.5M NaCl, pH 10 buffer (not supplied)** by mixing on a shaker for 10 min and centrifuge for 4 minutes at 9000 RPMs (8,000xg).

Scaleable and Versatile Protocol

The protocol can be scaled up or down proportionally to adjust for different serum volumes. The suspension amount can be adjusted to accommodate more or less albumin removal.

AlbuSorb™ References

Exosome

Chettimada, Sukrutha, et al. "Exosome markers associated with immune activation and oxidative stress in HIV patients on antiretroviral therapy." *Scientific Reports* 8.1 (2018): 7227.

Cerebrospinal Fluid

Gwenael Pottiez, Pawel Ciborowski. Proteomic Profiling of Cerebrospinal Fluid Expression Profiling In Neuroscience Neuromethods.2012;64:245-270

Synovial fluid

Happonen KE, Fürst CM, Saxne T et al. PRELP protein inhibits the formation of the complement membrane attack complex.Journal of Biological Chemistry.2012;287(11):8092-100

Serum
Valladolid-Acebes, Ismael, et al. "Lowering apolipoprotein CIII protects against high-fat diet–induced metabolic derangements." *Science Advances* 7.11 (2021).

Increased levels of apolipoprotein CIII (apoCIII), result in obesity-related metabolic derangements. The researchers investigated mechanistically whether lowering or preventing high-fat diet (HFD)– induced increase in apoCIII, protects against the detrimental metabolic consequences. For Western blotting determination of circulating apoCIII, the article states, "plasma was albumin depleted using AlbuSorb according to the manufacturer's protocol (Biotech Support Group LLC) and resuspended in 0.1% (v/v) trifluoroacetic acid."

Nelson K, Wilkinson, S. et al., High resolution accurate mass spectrometry-based proteomics in ecotoxicology: SWATH-MS to detect differentially expressed plasma proteins in the amphibian toxicological model *Xenopus laevis*. Poster: Conference: PRIMO20, May 2019

Valladolid-Acebes, Ismael, et al. "Lowering apolipoprotein CIII protects against high-fat diet–induced metabolic derangements." *Science Advances* 7.11 (2021): eabc2931.

Holmberg R, Refai E, Höög A.Lowering apolipoprotein CIII delays onset of type 1 diabetes. Proceedings of the National Academy of Sciences.2011;108(26):10685-9.

Tang MX, Ogawa K, Asamoto M. Effects of Nobiletin on PhIP-Induced Prostate and Colon Carcinogenesis in F344 Rats Nutrition and Cancer.2011;63(2):227-33

Holmberg, Rebecka Apolipoprotein CIII and Ljungan virus in diabetes 2010. Doctoral Thesis

Lu Q, Zheng X, McIntosh T Development of different analysis platforms with LC-MS for pharmacokinetic studies of protein drugs. Analytical Chemistry.2009;81(21):8715-23

Cell/Tissue Culture Media

"AlbuSorb™ worked very well for us. We removed at least 90% of the albumin from our 10% FBS conditioned medium samples", Joseph Sucic, University of Michigan.

Urine
Zubiri, Irene, et al. Diabetic nephropathy induces changes in the proteome of human urinary exosomes as revealed by label-free comparative analysis. Journal of Proteomics (2013).

Patent
Berggren, Per Olaf, Yang, Shao-Nian. 2012. Methods For Treating And/Or Limiting Development Of Diabetes.U.S. Patent 20120328630 Kind Code: A1, filed June 25, 2012, and issued December 27, 2012.

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