A SophoMer™ F10 Introduction

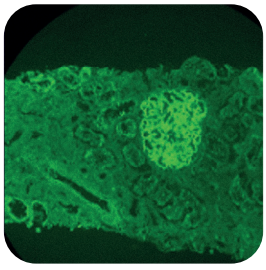
MAIN ADVANTAGES

- SYNTHETIC
- EFFECTIVE
- REPRODUCIBLE
- STABLE
- COST EFFECTIVE

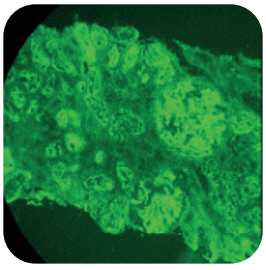
PRODUCT OVERVIEW
SYNTHETIC COPOLYMER →
SophoMer™ F10 is a fully synthetic HPMA copolymer engineered to effectively block nonspecific binding (NSB) and serve as a protein-free alternative to Bovine Serum Albumin (BSA) in both manual and automated immunoassay design and manufacturing (e.g., CLIA, ELISA).

MULTIPLE APPLICATIONS →
SophoMer™ F10 can also be used in other applications, including including Immunohistology, Surface Plasmon Resonance (SPR), Western Blotting, biosensors, and related techniques.

OPTIMIZED FOR BLOCKING NON-SPECIFIC INTERACTIONS →
Primarily optimized as a blocker of non-specific interactions, which are a major issue during immunochemical method design and development and often lead to significant deterioration of analytical parameters.



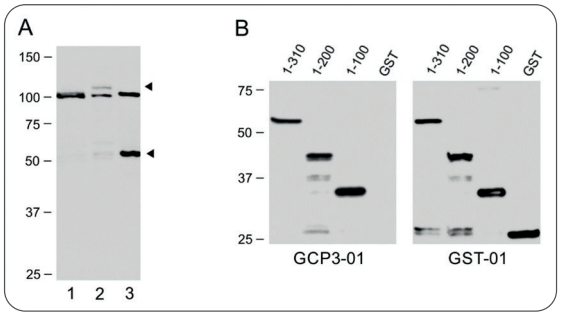
SophoMer F10 addition



Standard process

Immunofluorescence of IgG deposits on kidney cryosections.

Department of Pathology, University Hospital Hradec Králové.



Reactivity of the GCP3-01 antibody in immunoblot experiments using SophoMer F10.

Detection of GCP3 (103 kDa) in whole-cell lysates from mouse bone marrow-derived mast cells (BMMCL, lane 1), rat basophilic leukemia cells (RBL-2H3, lane 2), and human glioblastoma (U-251 MG, lane 3).

Experiments were performed at the Laboratory of Biology of the Cytoskeleton, IMG CAS, Prague, Czech Republic, under the supervision of Dr. Pavel Dráber.

Technical characterization

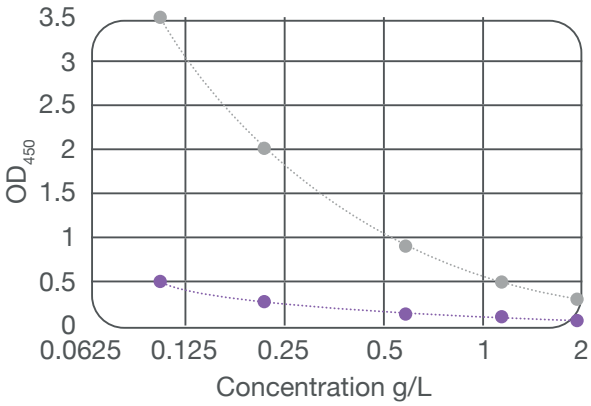
TECHNICAL ADVANTAGES

- **Good solubility in water**
- **Does not affect other assay components such as Immunoglobulins, Enzymes, Acridinium esters, surfactants, or antimicrobial agents**
- **No absorption in visual or near UV spectrum**
- **No autofluorescence nor fluorescence quenching**
- **Free of residual enzymes such as Proteases, RNAses, DNAses and other biological admixtures**
- **Thermostable - solutions can be sterilized by autoclaving**
- **Non-toxic**

NON-SPECIFIC SIGNAL SUPPRESSION

- SophoMer™ F10 significantly reduces nonspecific binding compared to BSA, as demonstrated in ELISA tests using horseradish peroxidase (HRP).
- When replacing BSA with SophoMer™ F10, it is recommended to start with a concentration five times lower than that of BSA in initial experiments.
- **Important!** Use SophoMer™ F10 both for surface blocking and in working solutions.
- To determine the optimal concentration of SophoMer™ F10, test concentrations up to 100 times lower than the BSA concentration used in the same assay.

Background signal in ELISA based test in the presence of various concentrations of ● BSA and ● SophoMer™ F10



- For detailed SophoMer™ F10 ELISA performance data, see Šubr, V., Kostka, L., Plicka, J., Sedláček, O., & Etrych, T. (2024). Highly effective synthetic polymer-based blockers of nonspecific interactions in immunochemical analyses. Polymers, 16(6), 758. https://doi.org/10.3390/polym16060758

SUMMARY OF SOPHOMER™ F10 PROPERTIES

Form/appearance	White solid amorphous substance
Mw [kDa]	30
Absorption peak [nm]	~ 220
Solubility in water [g/L]	100
Solubility in ethanol [g/L]	> 100
Moisture content [% (w/w)]	5 % (estimate)
Immunogenicity	Not immunogenic

RECOMMENDATIONS FOR SOPHOMER™ F10 APPLICATION

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Hygroscopicity	Slightly hygroscopic. The vial containing SophoMer™ F10 should be equilibrated at RT for 30 minutes before opening. Close the vial after manipu-lation without delay.
Storage conditions	Long-term storage at 2 - 8°C, transport, short-term storage at RT
Dissolution behavior	Complete dissolution requires several hours — prepare the solution in advance. We recommend allowing SophoMer™ F10 to dissolve for at least 24 hours before use. Mild foaming can be observed.
Stability in solution	RT up to one week, 2 - 8°C long term
Recommended antibacterial additives	Sodium azide, Thimerosal (standard concentrations) The solution is thermostable and can be sterilized by autoclaving or heat.
Compatibility with surfactants	No effect was observed after addition of 0.05 % (w/w) of Tween 20.
Recommended pH range at which material keeps its expected performance	Standard buffers in pH range 4.7 - 7.8
Compatibility with materials	SophoMer F10 has been optimized for use with polystyrene surfaces; however, it is also suitable for other materials, such as nitrocellulose in Western blot applications.
Effect on other immunoassay compo-nents	**Immunoglobulins:** no cross-reaction observed **BSA:** no cross-reaction observed **Horse radish peroxidase:** no cross-reaction observed **Alkalic phosphatase:** not tested **β-Galactosidase:** not tested
Important recommendations	**For optimal performance, SophoMer F10 should be included in the incubation buffers.** When used extensively, ensure proper decontamination of exposed laboratory equipment such as microplate washers or automated dispensing systems. If needed, use a decontamination solution of 20–30% (v/v) ethanol in water.

Economic Efficiency

LOWER MATERIAL CONSUMPTION	→	Reduced material requirements compared to BSA or other conventional agents, resulting in cost and resource savings.
REPRODUCIBLE BATCH PERFORMANCE	→	Consistent material performance eliminates the need for extensive testing of new batches.
ROOM TEMPERATURE STABILITY	→	The material remains stable under ambient conditions, simplifying transport, storage, and handling.
REGULATORY COMPLIANCE	→	Animal components free material eliminates the costs and documentation requirements associated with handling and transporting biological materials.
LONG-TERM STABILITY	→	Stable for at least 2 years from manufacturing date; usage can be extended after retesting.
IVDR COMPLIANCE	→	SophoMer™ F10 is an integral component of several CE-IVD–compliant CLIA assays developed for the BioVendor fully automated KleeYa® platform.

Environmental Benefits

ANIMAL COMPONENTS-FREE MATERIAL → Eliminates the use of animal-derived substances such as BSA, promoting ethical sourcing and reducing the environmental impact of livestock-based production.

WATER SOLUBLE, NON-TOXIC → SophoMer™ F10 is highly soluble in water and non-toxic to humans as well as to aquatic ecosystems.

SUBSTANTIALLY LOWER CARBON FOOTPRINT → SophoMer™ F10 generates only 178.4 kg CO_2e compared to 3,893.1 kg CO_2e for BSA, dramatically reducing environmental impact.

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