

SophoMer™ F10 in CLIA Assays

Application note

Purpose of This Data Sheet

This technical data sheet summarizes experimental evidence demonstrating the analytical and practical benefits of replacing bovine serum albumin (BSA) with the fully synthetic polymer SophoMer™ F10 in chemiluminescent immunoassays (CLIA). The document is intended as a concise, data-driven supplement to a scientific article and focuses exclusively on assay performance and robustness.

1. Background

Non-specific binding is a critical factor affecting sensitivity, background signal, and reproducibility of CLIA assays. BSA is commonly used as a blocking reagent; however, its animal origin is associated with batch-to-batch variability, potential enzymatic contamination, and limited standardization.

SophoMer™ F10 is a chemically defined, fully synthetic polymer designed to suppress non-specific, non-covalent interactions and to provide consistent surface passivation in immunoassays.

2. Materials and assay design

The effect of SophoMer™ F10 and BSA was evaluated in otherwise identical CLIA assay formats. All assay components, protocols, and measurement conditions were kept constant, with the blocking reagent being the only variable.

Two performance aspects were assessed:

- Calibration curve characteristics across the analytical range
- Correlation of results obtained from clinical samples

3. Calibration Curve Performance

3.1 Experimental Observation

Calibration curves generated using SophoMer™ F10 showed a consistently steeper slope compared to those obtained with BSA across the full calibration range. This effect was particularly pronounced at low analyte concentrations.

Table1: Calibration curves comparison

Calibration curves comparison		
ng/mL	BSA	F10
	RLU	
0	960	1 441
0,01	2 791	3 821
0,05	10 302	13 948
0,3	59 008	79 688
3	592 224	788 692
30	4 278 322	5 340 131

Chart1: Calibration curves comparison – complete range

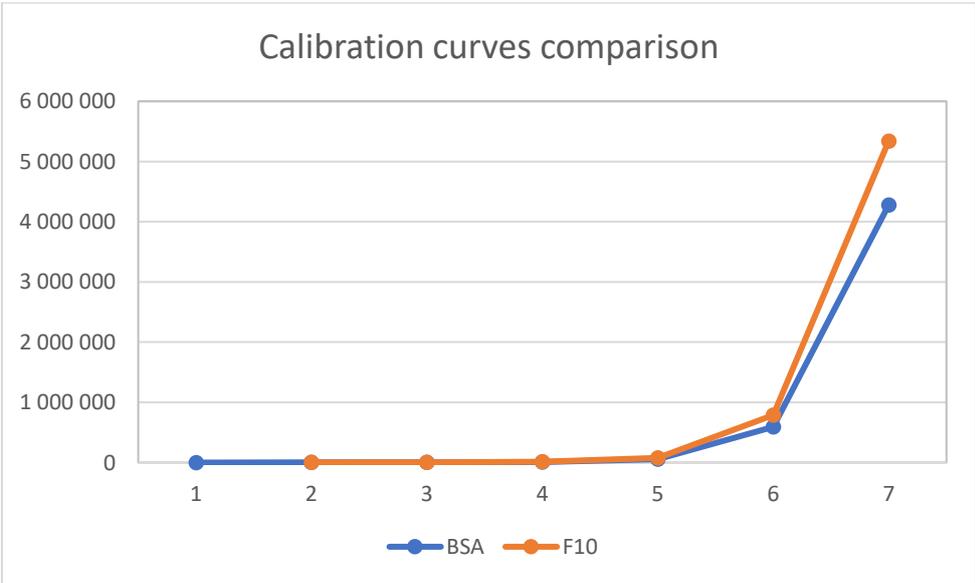
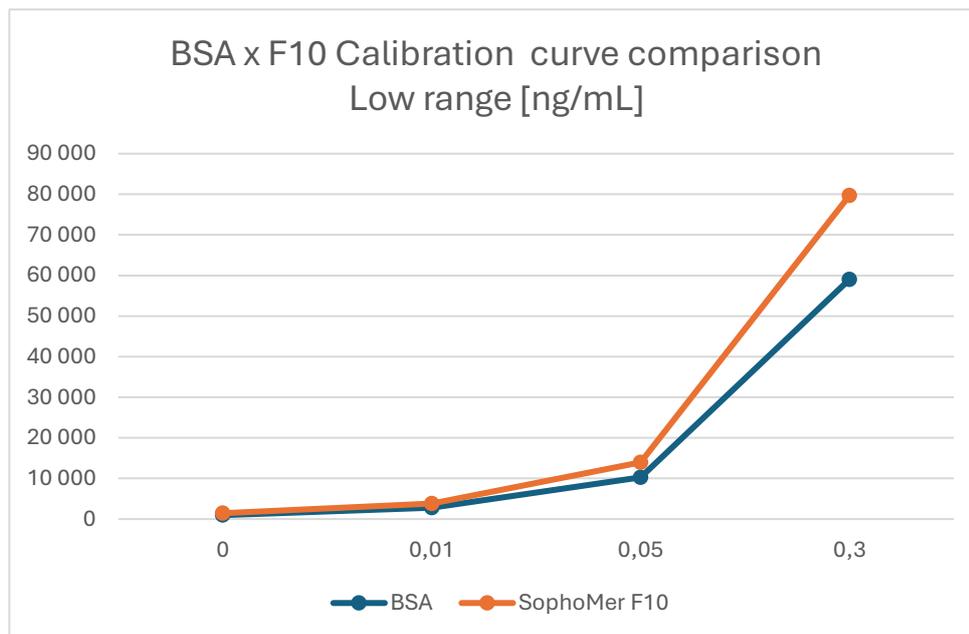


Chart2: Calibration curves comparison – low range



A steeper calibration curve directly improves the accuracy of analyte concentration determination. Enhanced slope in the low-concentration region indicates improved analytical sensitivity, enabling more reliable detection and quantification of low-abundance analytes.

These results demonstrate that SophoMer™ F10 provides equal or superior blocking efficiency compared with BSA, despite being used at significantly lower working concentrations.

4. Clinical Sample Correlation

4.1 Study Design

Ten clinical samples were analyzed using CLIA assays containing either BSA or SophoMer™ F10 as the blocking reagent.

4.2 Results

Results obtained with SophoMer™ F10 showed excellent agreement with those obtained using BSA. The ratio of SophoMer™ F10–based results to BSA-based results ranged from 0,9 to 1,1 across all samples.

Table 2: True sample results correlation

Sample	ng/mL		Ratio
S1	0,080	0,082	1,03
S2	0,108	0,113	1,05
S3	0,181	0,190	1,05
S4	0,285	0,300	1,05
S5	0,301	0,314	1,04
S6	0,582	0,615	1,06
S7	0,209	0,198	0,95
S8	0,197	0,200	1,01
S9	0,416	0,452	1,08
S10	0,200	0,193	0,97

Chart 3: True sample results correlation

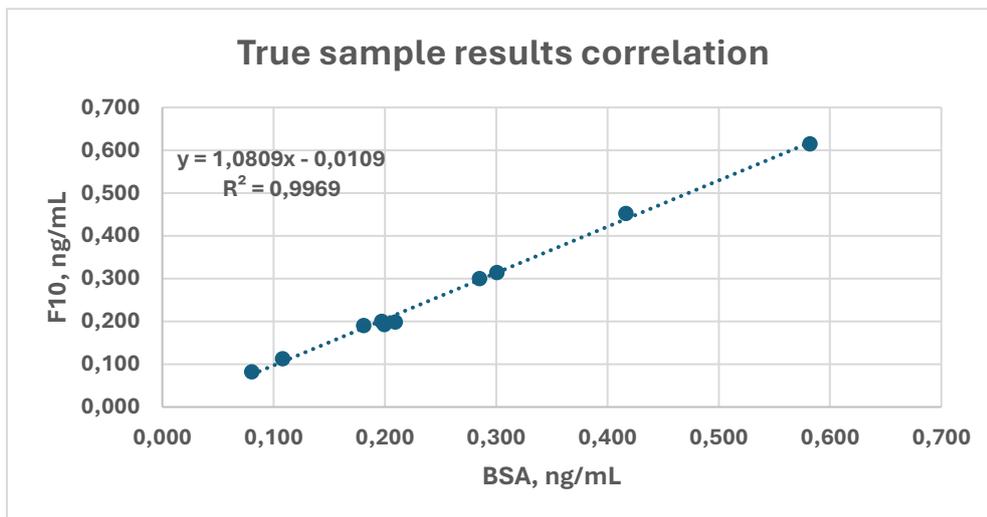
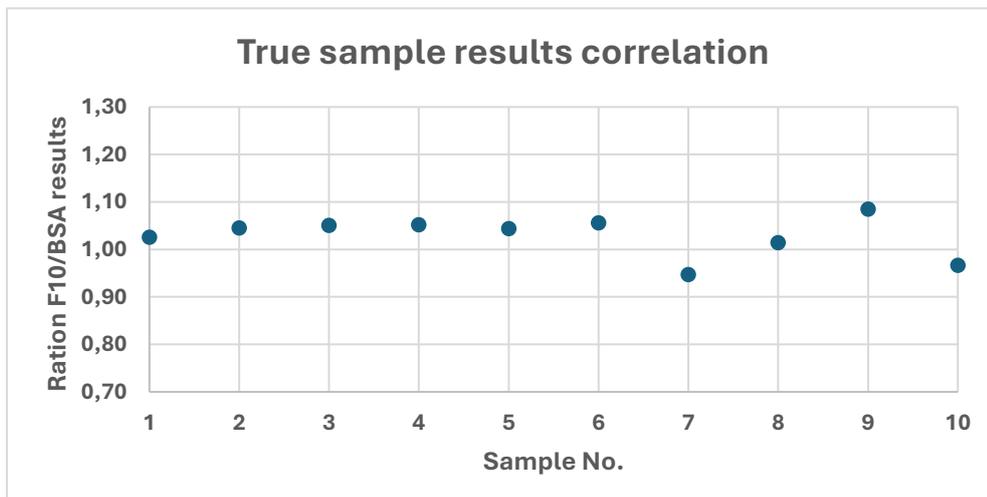


Chart 4: Ratio results correlation



4.3 Interpretation

This level of agreement is well within commonly accepted limits for immunoassay comparability and intra-assay reproducibility. The data confirm that replacing BSA with SophoMer™ F10 does not introduce systematic bias while maintaining analytical equivalence.

5. Technical Advantages of SophoMer™ F10 Relevant to CLIA

- Chemically defined synthetic polymer with excellent batch-to-batch reproducibility
- Highly effective suppression of non-specific binding at 5–10× lower concentrations than BSA
- Robust thermal stability, including compatibility with autoclaving
- Stable in solution at room temperature for up to one week
- Animal component-free, eliminating risks of pathogen or enzyme contamination

6. Conclusion

Experimental data demonstrate that SophoMer™ F10 is a technically robust and analytically advantageous alternative to BSA in CLIA assays. Its use results in improved calibration curve characteristics, preserved clinical sample accuracy, and enhanced assay standardization.

These findings support the use of SophoMer™ F10 as a next-generation blocking reagent for high-performance and sustainable CLIA assay development.