Total GRP analysis service

Measuring total GRP in your samples

Service overview: Quantitative determination of human total Gla-rich protein (tGRP) using a validated sandwich ELISA (see Selected References). The assay has been analytically validated for multiple biological matrices, including serum, peritoneal dialysate, cell culture supernatants, and RIPA protein extracts, supporting both basic, translational and clinical research applications. Additional sample types may be evaluated upon request.

Assay Specifications

Parameter	Specification
Assay format	Sandwich ELISA
Target	Human total GRP (tGRP)
Detection antibodies	N-terminal capture / C-terminal detection (PA:T50)
Dynamic range	60–1600 pg/mL
Sample volume	100 µL

Analytical Performance

The analytical performance of the assay has been established through extensive validation studies. Across published validation datasets, intra-assay precision ranged from 1.4% to 3.2% CV, while inter-assay precision ranged from 2.5% to 9.4% CV (Biochem Med 2026). Each analytical run includes internal quality controls to ensure compliance with predefined acceptance criteria.

Deliverables

Included in the service

tGRP concentration	Reported in pg/mL for each individual sample
Data format	Excel spreadsheet (.xlsx) and PDF report
Quality control	Standard curve, assay acceptance criteria and internal quality controls
Technical replicates	Duplicate measurements (unless otherwise requested)
Data interpretation	Summary of assay performance and comments on samples outside the validated quantification range

NOTE: Raw ELISA data available upon request.

Optional services (upon request):

- Statistical analysis
- Graphical data presentation
- Scientific consultation for study design and data interpretation

Sample Requirements

- Validated matrices: human serum, peritoneal dialysate, cell culture supernatants and RIPA protein extracts.
- Sample volume: A minimum of **150 µL** per sample is required for single (single-well) analysis. For **duplicate measurements (recommended)**, at least **250 µL** per sample should be provided. Different sample volumes may be required depending on sample concentration or if repeat analysis is requested.
- Store at −80°C whenever possible and ship on dry ice.
- Avoid repeated freeze–thaw cycles.
- Samples should be labelled using anonymized or coded identifiers only (no patient names or personal identifiers) and accompanied by a completed sample submission form. All analyses are performed blinded to sample identity and study groups.

Note: If sample collection or storage conditions differ from the recommendations above, please contact us before shipment. We will be happy to advise on sample suitability and handling.

Selected References

- Viegas CSB et al. (2018). Chronic kidney disease circulating calciprotein particles and extracellular vesicles promote vascular calcification: a role for GRP. Arterioscler Thromb Vasc Biol 38(3):575-587. https://doi.org/10.1161/ATVBAHA.117.310578
- Silva AP et al. (2020). Gla-rich protein (GRP) as an early and novel marker of vascular calcification and kidney dysfunction in diabetic patients with CKD: a pilot cross-sectional study. J Clin Med 9(3):635. https://doi.org/10.3390/jcm9030635
- Silva AP et al. (2022). Gla-rich protein, magnesium and phosphate associate with mitral and aortic valves calcification in diabetic patients with moderate CKD. Diagnostics 12(2):496. https://doi.org/10.3390/diagnostics12020496
- Marreiros C et al. (2024). Gla-rich protein is associated with vascular calcification, inflammation, and mineral markers in peritoneal dialysis patients. J Clin Med 13(23):7429. https://doi.org/10.3390/jcm13237429
- Marreiros C et al. (2026). Factors associated with Gla-rich protein serum concentrations in healthy adults. Biochem Med (Zagreb) 36(2):020709. https://doi.org/10.11613/BM.2026.020709

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