

CD Creative Diagnostics®

Semaglutide ELISA Kit

Semaglutide is a long-acting, acylated glucagon-like peptide-1 (GLP-1) receptor agonist approved for the treatment of type 2 diabetes mellitus and obesity. This synthetic peptide analog is engineered with a fatty acid modification to extend its half-life and targets the GLP-1 receptor (GLP-1R), which is expressed on pancreatic β -cells, as well as in the central nervous system and the gastrointestinal tract. By activating GLP-1R, Semaglutide exerts its therapeutic effects primarily through three key mechanisms: glucose-dependent stimulation of insulin secretion, suppression of inappropriately elevated glucagon levels, and delayed gastric emptying, thereby improving glycemic control and promoting satiety.

Using Semaglutide-specific antibodies as coating and detection reagents, we have developed a highly sensitive ELISA kit for quantifying Semaglutide. The lower limit of detection is 0.13 ng/mL, providing a reliable tool for pharmacokinetic studies of the drug.

Key specifications:

- **Detection range:** 0-500 ng/mL
- **Average IC_{50} :** 7 ng/mL
- **Sensitivity:** 0.13 ng/mL
- **Cross-reactivity:** Liraglutide <15%, Exendin-4 <0.1%
- **Sample types:** Serum & plasma

Semaglutide Standard Curve

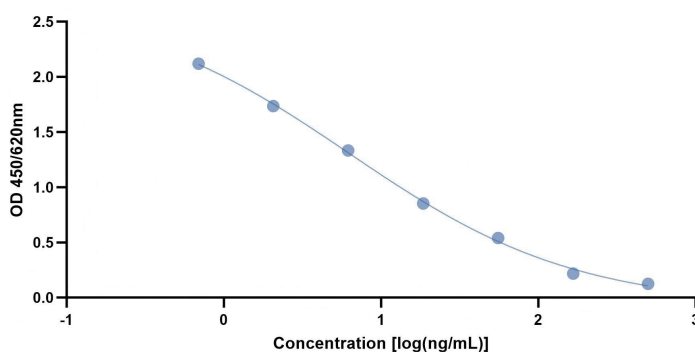


Figure 1. Semaglutide standard curve.

Table 1. Semaglutide standard data.

	OD _{450/620nm}
S1	0.125
S2	0.2183
S3	0.5397
S4	0.8527
S5	1.3332
S6	1.7358
S7	2.1194
S0	2.2539

Validate data - Spike Recovery Studies

Table 2 Spike Recovery Studies

Sample	Dilution	Cal. (ng/ml)	Recovery (%)
Serum	5	105.45	105%
	10	94.36	94%
	20	98.67	99%
	40	82.99	83%
Plasma	5	114.21	114%
	10	94.36	94%
	20	89.04	89%
	40	84.94	85%

Conclusion: Recovery rates range from 83-114%, meeting the typical acceptance criteria for bioanalytical methods (80-120%).

Minimum Required Dilution (MRD) of 5-fold is recommended to ensure matrix effect mitigation.

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Validate data - Precision

Table 3 QC samples for CV determination

Intra-assay Precision	Mean std conc.(ng/ml)	n	CV
Sample 1	1.62	10	6%
Sample 2	15.83	10	3%
Sample 3	147.91	10	5%

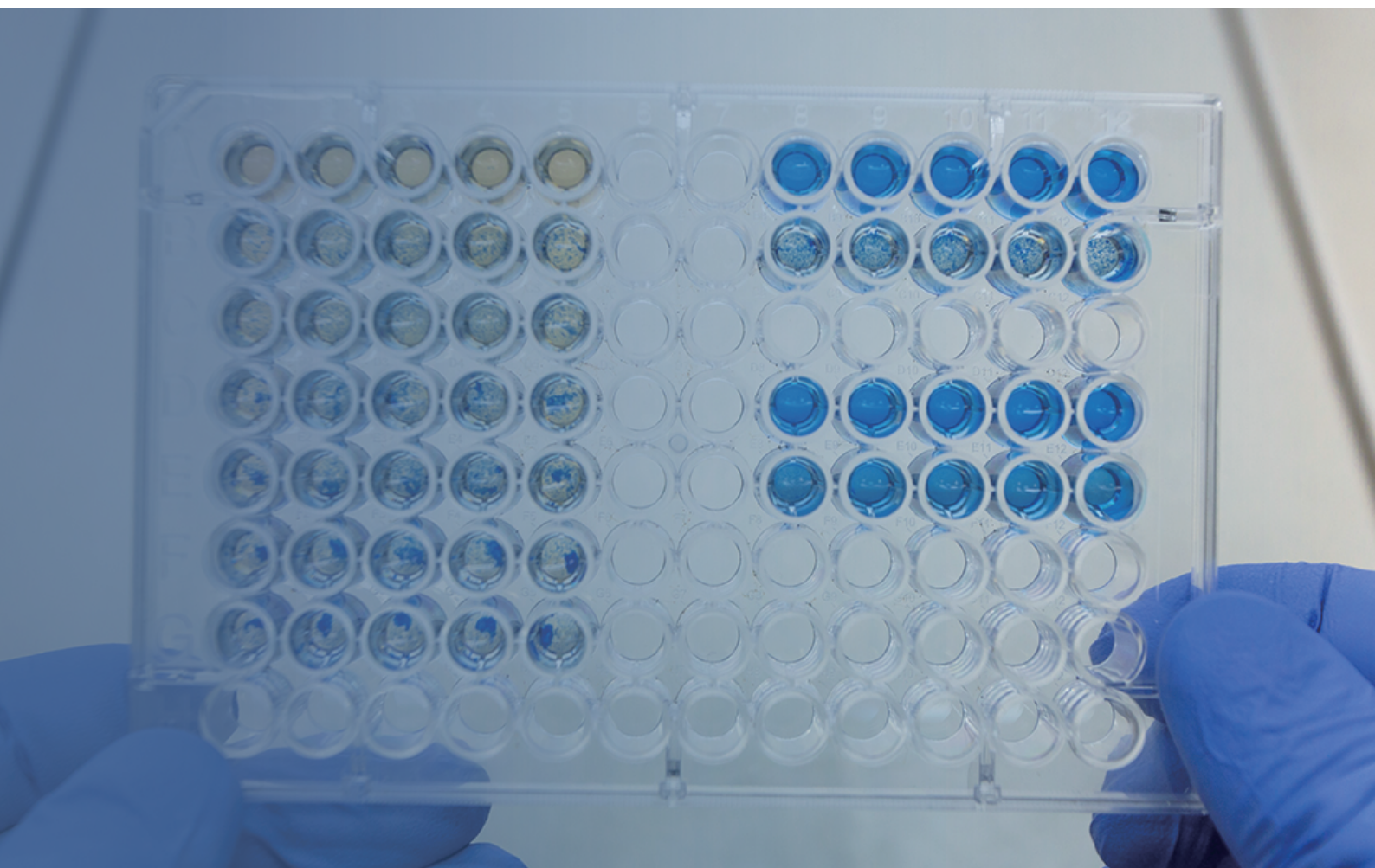
Intra-assay Precision	Mean std conc.(ng/ml)	n	CV
Sample 1	1.55	10	9%
Sample 2	15.02	10	8%
Sample 3	158.84	10	10%

Conclusion: All coefficient of variation (CVs) were < 20%, satisfying the acceptance criteria for ELISA-based assays.

Intra-assay precision (3 - 6%) was excellent, while inter-assay precision (8 - 10%) demonstrated good reproducibility across runs.

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