

Worked relative potency analysis

Example 4PL restricted fit — educational regression fixture

Analysis summary

Analyst, date, model, disposition, and transformations.

Analyst	Analysis date	Model	Disposition
Example analyst · example@provenarium.com	July 16, 2026 · 16:00 UTC	4PL · restricted	PASSED

Fit transformations: concentration log10; response identity. Concentration parameters are back-calculated and reported in ng/mL.

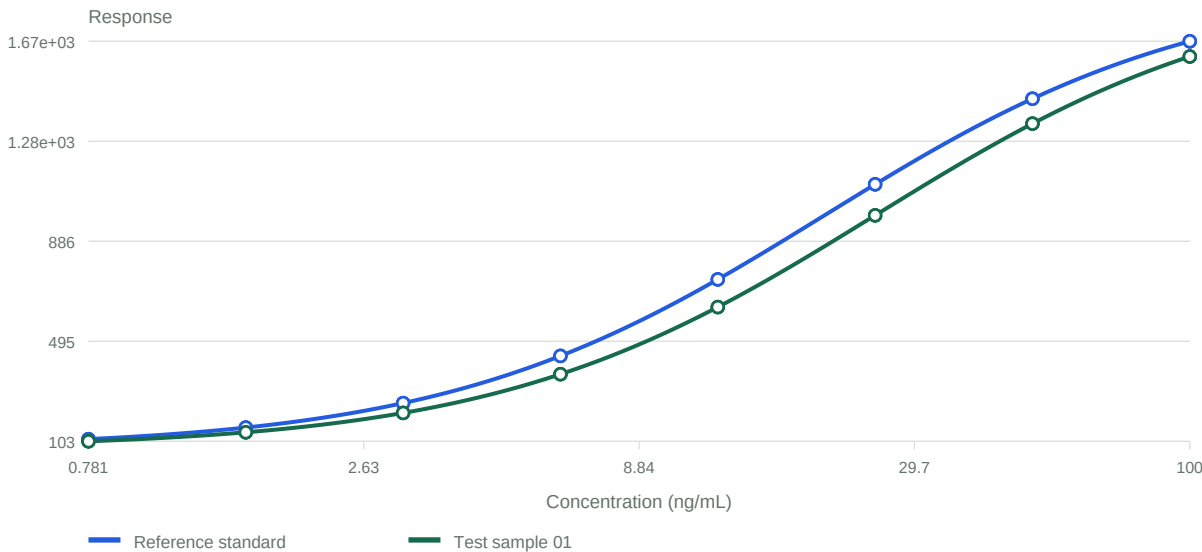
Relative potency results

Relative potency, EC50, and fit quality by sample.

Sample	Role	EC50 (ng/mL)	Relative potency	R ²
Reference standard	Reference	20.000 ng/mL	100.0%	1.0000
Test sample 01	Test	25.000 ng/mL	80.0%	1.0000

Dose-response fit

Reference and test responses with fitted 4PL curves.



Fitted model parameters

Parameter estimates for each sample.

Sample	Role	Bottom	Top	EC50 (ng/mL)	Hill slope
Reference standard	Reference	75.0000	1900.0000	20.0000 ng/mL	1.2000
Test sample 01	Test	75.0000	1900.0000	25.0000 ng/mL	1.2000

System suitability

Configured criteria, observed values, and outcomes.

Criterion	Observed	Outcome
Reference standard $R^2 \geq 0.98$	1.000	PASS
Test sample 01 $R^2 \geq 0.98$	1.000	PASS
Test sample 01 potency in 50–200%	80.000	PASS
Maximum replicate CV $\leq 20\%$	0.000	PASS
Test sample 01 independent slope ratio in 0.8–1.25	1.000	PASS

Data exclusions

Excluded wells and the scientific reason for each exclusion.

No values were excluded from this analysis.

Source file

Uploaded filename, worksheet, plate size, and selected range.

Source file	relative-potency-4pl.csv
Worksheet	CSV data
Plate selection	96 well · 8 × 12
Selected source range	B6:M13

Dilution settings

Initial concentrations, units, factors, and levels.

Sample	Role	Initial concentration	Unit	Dilution factor	Levels
Reference standard	Reference	100.000000	ng/mL	2.000000	8
Test sample 01	Test	100.000000	ng/mL	2.000000	8

Plate layout

Sample, replicate, dilution-level, and exclusion assignments by well.

REF — Reference standard; T1 — Test sample 01. R = replicate; D = dilution level; EX = excluded from the fit.

	1	2	3	4	5	6	7	8	9	10	11	12
A	REF R1 / D1	REF R2 / D1	REF R3 / D1	T1 R1 / D1	T1 R2 / D1	T1 R3 / D1	—	—	—	—	—	—
B	REF R1 / D2	REF R2 / D2	REF R3 / D2	T1 R1 / D2	T1 R2 / D2	T1 R3 / D2	—	—	—	—	—	—
C	REF R1 / D3	REF R2 / D3	REF R3 / D3	T1 R1 / D3	T1 R2 / D3	T1 R3 / D3	—	—	—	—	—	—
D	REF R1 / D4	REF R2 / D4	REF R3 / D4	T1 R1 / D4	T1 R2 / D4	T1 R3 / D4	—	—	—	—	—	—
E	REF R1 / D5	REF R2 / D5	REF R3 / D5	T1 R1 / D5	T1 R2 / D5	T1 R3 / D5	—	—	—	—	—	—
F	REF R1 / D6	REF R2 / D6	REF R3 / D6	T1 R1 / D6	T1 R2 / D6	T1 R3 / D6	—	—	—	—	—	—
G	REF R1 / D7	REF R2 / D7	REF R3 / D7	T1 R1 / D7	T1 R2 / D7	T1 R3 / D7	—	—	—	—	—	—
H	REF R1 / D8	REF R2 / D8	REF R3 / D8	T1 R1 / D8	T1 R2 / D8	T1 R3 / D8	—	—	—	—	—	—

Uploaded plate data

Measurements read from the selected plate range.

	1	2	3	4	5	6	7	8	9	10	11	12
A	1668.947809	1668.947809	1668.947809	1609.303791	1609.303791	1609.303791	—	—	—	—	—	—
B	1444.070414	1444.070414	1444.070414	1346.53308	1346.53308	1346.53308	—	—	—	—	—	—
C	1108.946298	1108.946298	1108.946298	987.5	987.5	987.5	—	—	—	—	—	—
D	736.784121	736.784121	736.784121	628.46692	628.46692	628.46692	—	—	—	—	—	—
E	437.237792	437.237792	437.237792	365.696209	365.696209	365.696209	—	—	—	—	—	—
F	252.577901	252.577901	252.577901	214.039859	214.039859	214.039859	—	—	—	—	—	—
G	156.789557	156.789557	156.789557	138.241533	138.241533	138.241533	—	—	—	—	—	—
H	111.525387	111.525387	111.525387	103.076923	103.076923	103.076923	—	—	—	—	—	—

Analysis record

Run details, software versions, and fingerprints that identify the source data file and analysis configuration.

Run ID	run_example_4pl
Analyst	Example analyst · example@provenarium.com
User ID	example
Analysis date	July 16, 2026 · 16:00 UTC
Report generated	July 16, 2026 · 16:05 UTC
Analysis engine	1.0.0 · schema 1.0
Model version	4pl@1.0.0
Concentration unit	ng/mL
Fit transformations	concentration: log10; response: identity
Calculation versions	Replicate statistics v1.0.0, Residual diagnostics v1.0.0
Source data file fingerprint (SHA-256)	196ccbddd85337671a4a89ea80e7ba330c596f4c523af80b66e43cbca53e89220
Analysis configuration fingerprint (SHA-256)	579a8169f2dc87890ae0da38a10920da38f5af19f22773e12dc0c433cb9b3e72