

Understanding the COA.

How to read a certificate of analysis, put purity values into context and recognise whether a certificate is genuine.

Why the COA is the only thing that counts

Every supplier writes “highest purity” on the product page. That is a claim. A Certificate of Analysis (COA) is the proof — or it isn’t.

A COA is the lab report for a specific **batch** (lot). It documents what was actually in the vial when a sample from it was tested. No COA means: you are buying a promise. A COA without a batch number means the same, just with more paper.

The three questions a COA must answer

1. **Identity** — Is the substance on the label actually in it?
2. **Purity** — What percentage of the substance is the target molecule?
3. **Traceability** — Does this certificate belong to exactly this batch?

If a document answers only two of them, it is not a full COA. If it answers only one, it is advertising.

What a COA is not

A COA says nothing about safety, efficacy or suitability for any application. It is an analysis record, not a licence. It says: “This sample contained X % of this substance.” Nothing more — and that is exactly where its value lies.

Anatomy of a COA

Every reputable certificate contains the same mandatory fields. If one of them is missing, ask questions.

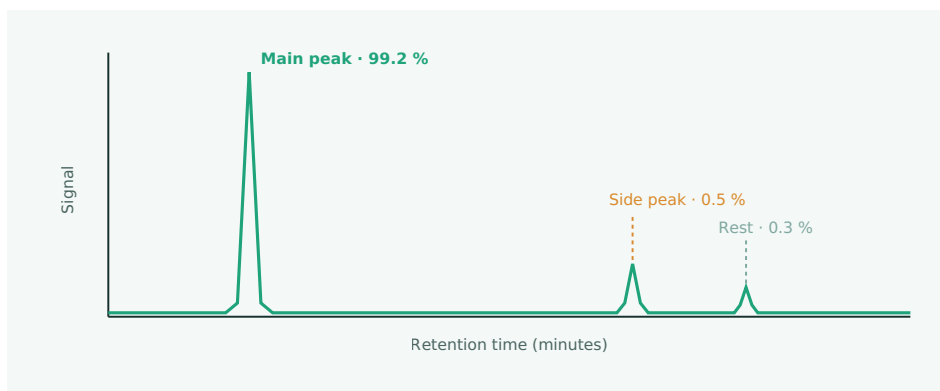
Field	What it means — and what to look out for
Product / substance	The full chemical name, not just a trade name. “GLP-1” is not a substance name. “Semaglutide” is.
Batch / lot number	Must match the number on your vial. This is the most important check of all.
Test date	Should fit the batch in time. A COA from three years ago for a fresh batch makes no sense.
Testing lab	Name, ideally with contact details or a test reference. A lab without a name is not a lab.
Method	Usually HPLC (purity) and MS (identity). If no method is stated, the value is worthless.
Purity in %	The core value. Always with method and decimal place, e.g. “99.2 % (HPLC)”.
Chromatogram	The graph with the peaks. Without it you cannot verify the percentage.
Mass / molecular weight	From mass spectrometry. Confirms the identity of the molecule.

Red flag: the COA without a batch number

If a shop shows a single COA for a product that has been online unchanged for months, it is not testing every batch. It is showing you a photo of a good day.

Reading the chromatogram

The HPLC graph looks complicated. It isn't. You need exactly three things from it.



1. The main peak

The highest, narrowest spike. It represents your target molecule. The **area** under this peak — not its height — determines the purity. A good main peak is sharp and symmetrical. A broad, skewed peak points to degradation or contamination.

2. The side peaks

Everything else. At 99.2 % purity, the remaining 0.8 % is spread across side peaks. A single large side peak is more concerning than many small ones — it can point to a specific degradation product or a by-product of synthesis.

3. The retention time

The point in time at which the peak appears. Under defined conditions it is characteristic of each substance. If it deviates clearly from the expected time, the vial may not contain what the label says.

Rule of thumb

Area = purity. Shape = quality. Time = identity. If one of the three is off, the result is off.

Putting purity values into context

">99 %" sounds impressive. But 99 % of what, measured how?

Claim	How to read it
>99 % (HPLC)	Solid and verifiable — if the chromatogram is included. The standard for research peptides.
99.2 % (HPLC)	Better than ">99 %": a specific measured value instead of a lower limit. Indicates a genuine batch measurement.
>98 %	Not automatically bad — but ask what the remaining 2 % is.
"High purity"	Not a value. Marketing.
100 %	Warning sign. Analytically practically impossible. No reputable lab writes this.
Purity without method	Worthless. Without an HPLC reference you don't know how it was measured.

Peptide content is not purity

Two different values that are often confused:

- **Purity (HPLC)** — share of the target molecule among all peptide components.
- **Peptide content** — share of the peptide in the total contents of the vial. The rest is water, salts, carriers. A vial can be 99 % pure and still have only 70 % peptide content.

For most purposes, HPLC purity is the relevant value. Anyone who states both has nothing to hide.

How to spot a fake COA

Forged certificates are widespread in the peptide market. Most of them fail on the same details.

The seven typical mistakes

Signal	Why it is suspicious
No chromatogram	Just a number without a graph. Anyone can type the number. Not the graph.
Batch number missing or not matching	The most common case. Always check against the vial label.
Identical COA for several products	Same peaks, same times, different product name — copied.
Pixelated or crooked numbers	Retouched into a PDF afterwards. Zoom in: does the number sit cleanly in the line?
Lab without a trace	Google the lab name. If it doesn't exist, the test doesn't exist.
No method stated	A real lab documents column, mobile phase and gradient.
Suspiciously round values	Real measurements give 99.17 %. Not 99.00 %.

The two-minute test

Open the PDF and zoom in to 400 % on the purity value and the batch number. Retouched numbers show different edge sharpness or a slightly different font weight from the rest of the document. It is the quickest forgery test you can do without specialist knowledge.

An independent lab beats an in-house lab

A COA from the manufacturer itself is a conflict of interest. A COA from a third-party lab that the seller does not control is the stronger statement. If in doubt, ask: “Who did the testing — and can I verify it with the lab?”

Your checklist before buying

Nine questions. If you can answer yes to all of them, you are looking at a reliable certificate.

Checkpoint

- ☐ Is there a COA at all — for **my** batch, not just “an example”?
- ☐ Does the batch number on the COA match the one on the vial?
- ☐ Is a chromatogram shown, not just a number?
- ☐ Is the method stated (HPLC, MS)?
- ☐ Is the purity value a specific measurement with a decimal place?
- ☐ Is the mass from the MS analysis stated, and does it match the molecule?
- ☐ Is the testing lab named and traceable?
- ☐ Is the test date plausible for the batch?
- ☐ Is the lab independent of the seller?

At Peptelia

Every batch comes with a COA from **Janoshik Laboratories** — an independent testing lab that we do not control. Purity by HPLC, identity by MS, batch number on the certificate and on the vial. If anything about it does not seem plausible to you, write to us: info@peptelia.com

What you cannot read from a COA

A COA says nothing about whether a substance is suitable, safe or permitted for you. It describes only what was measured in a laboratory sample. Everything else is a different question — and not one a certificate of analysis answers.

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