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The Dispatch Guide to *Peptide Verification*

A comprehensive guide for the United Kingdom market — covering what research peptides are, how to read a Certificate of Analysis, verification protocols, independent laboratory testing, the MHRA regulatory framework, and the essential role of medical supervision.

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CHAPTER 01

What Is a Peptide?

Definition

A peptide is a short chain of amino acids — the same building blocks that make up proteins — connected by peptide bonds. Peptides are typically defined as chains of 2 to 50 amino acids in length; longer chains are generally classified as proteins. The human body produces hundreds of naturally occurring peptides that serve as hormones, neurotransmitters, and signalling molecules — insulin, for instance, is a peptide hormone consisting of 51 amino acids.

Synthetic research peptides are laboratory-manufactured versions of these naturally occurring compounds, or novel sequences designed to mimic or modulate specific biological pathways. They are produced for research purposes by specialist synthesis laboratories using solid-phase peptide synthesis (SPPS) or liquid-phase methods, then purified and characterised before supply.

Research Classification in the UK

In the United Kingdom, most synthetic research peptides are classified as Research Use Only (RUO) compounds. This designation indicates they are produced and supplied for scientific research purposes, not for human therapeutic use. The RUO classification is meaningful in a genuine research context — however, the MHRA has noted that it does not automatically exempt a product from medicines regulation if it is, in practice, intended or used for human administration.

The consequence is that the regulatory status of any specific peptide in the UK context depends not only on its molecular structure but on how it is supplied, presented, and used. A compound that makes medicinal claims, or that is supplied in a form clearly intended for human use, may be treated as an unlicensed medicine under the Human Medicines Regulations 2012 regardless of its RUO labelling.

> PEPTIDE VS SUPPLEMENT VS LICENSED MEDICINE
>
> **Research peptide (RUO):** Not licensed for human use in the UK. No MHRA pre-market quality control. Quality depends entirely on supplier documentation.
>
> **Licensed medicine:** MHRA marketing authorisation required. Pre-market testing mandatory. Batch release controlled. Examples: Ozempic (semaglutide), Wegovy (semaglutide).
>
> **Food supplement:** Regulated under food law, not medicines law. Different quality standards. Collagen peptides are a common example.

CHAPTER 02

Reading a Certificate of Analysis

What Is a COA?

A Certificate of Analysis (COA) is a laboratory document that reports the analytical results for a specific batch of a compound. It is the primary quality document in the research peptide supply chain. A credible COA tells you what the compound is (identity) and how pure it is (purity) for a specific production batch. It does not tell you about what happened to the compound after it left the laboratory — during shipping, storage, or handling.

"A COA without a batch number does not verify your vial. It verifies someone's vial, at some point in the past."

Field 1 — Batch / Lot Number

The most critical field. The batch number on the COA must match the batch number on the product vial. Without this match, the COA provides no assurance about the specific product in your possession. A "generic" COA with no batch number, or a batch number that cannot be cross-referenced to your order, is not a valid quality document for your purchase.

Field 2 — HPLC Purity (≥ 98%)

High-Performance Liquid Chromatography (HPLC) purity must be stated as a percentage with the methodology explicitly described (see Chapter 5). The accepted minimum for research-grade peptides is 98%. The method must be reversed-phase HPLC (RP-HPLC) with UV detection; a percentage figure without a stated method cannot be verified or compared against the standard.

Field 3 — LC-MS Identity Confirmation

Liquid Chromatography–Mass Spectrometry (LC-MS) confirms that the compound is what the label claims, by measuring its molecular mass. The observed mass must correspond to the theoretical molecular weight for the stated CAS-registered compound. HPLC purity alone, without LC-MS identity, is insufficient — a highly pure sample of the wrong compound will pass HPLC.

Field 4 — Independent Laboratory

The testing laboratory must be independent of the supplier — no shared ownership, address, branding, or management. In the UK, look for UKAS accreditation (United Kingdom Accreditation Service, ukas.com). The

laboratory's accreditation should cover the specific methods used (HPLC, LC-MS). Verify the accreditation number in the UKAS public register.

Field 5 — Date and Analyst Reference

The date of analysis should be recent relative to the supply date. An undated COA, or one dated significantly before your purchase, does not confirm the current state of the specific batch. A named analyst or analyst reference creates a traceable record of responsibility for the result.

Field 6 — Compound Name, CAS Number, Molecular Weight

The full compound name, CAS registry number, and theoretical molecular weight must appear. The CAS number is the globally unique identifier — it removes ambiguity from compound naming. The LC-MS observed mass must correspond to the theoretical mass derived from the CAS-identified compound.

> COA MINIMUM REQUIREMENTS — SUMMARY
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> Batch number matching product label · HPLC purity ≥ 98% with stated RP-HPLC method · LC-MS identity with observed molecular weight · Independent UKAS-accredited laboratory · Date of analysis · Compound name + CAS number + molecular weight

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CHAPTER 03

Verification Protocol

The Six-Step Checklist

Before any decision about a research peptide source, work through each of these steps in order. A failed step is a stopping point — do not proceed past it without resolving the issue.

1. **Request the batch-specific COA.** The batch number on the COA must match the product vial. If the supplier cannot provide this, stop.
2. **Confirm laboratory independence.** The testing laboratory must not share ownership, premises, or management with the supplier. Look up the laboratory name independently.
3. **Verify UKAS or equivalent accreditation.** Check the UKAS register at ukas.com. The accreditation must be current and cover HPLC and LC-MS testing.
4. **Check HPLC purity ≥ 98% with stated method.** The method must be described as RP-HPLC. A number without a method is not a measurement.
5. **Check LC-MS identity confirmation.** Observed molecular weight must match the theoretical weight for the CAS-identified compound within analytical tolerance.
6. **Consult a licensed healthcare professional.** No verification checklist substitutes for medical supervision. This step must precede any decision about human use.

> **Warning:** If a supplier is unable or unwilling to provide documentation for any of steps 1–5, seek an alternative source. The cost of dealing with a substandard or counterfeit product — in financial and health terms — substantially exceeds any saving from a cheaper, less well-documented source.

CHAPTER 04

Independent Laboratory Testing

Why Independence Is the Critical Variable

In the absence of mandatory regulatory oversight for grey-market research peptides, the independence of the testing laboratory is the single factor that distinguishes meaningful quality assurance from a self-certification exercise. A supplier who tests their own products — or who uses a laboratory with commercial ties to them — creates a conflict of interest that undermines the credibility of the result.

An independent laboratory has no commercial interest in the outcome. Its result is what it is, regardless of what the supplier would prefer. This independence is the basis on which accreditation bodies assess laboratories: ISO/IEC 17025 requires, among other things, that laboratories be impartial and free from commercial pressures that could affect their results.

ISO/IEC 17025 and UKAS

ISO/IEC 17025:2017 is the international standard for testing and calibration laboratory competence. It covers both management (quality systems, document control, corrective actions) and technical requirements (personnel, equipment, method validation, measurement uncertainty). Laboratories accredited to this standard have been independently assessed and found to meet both domains.

In the UK, UKAS (United Kingdom Accreditation Service) is the national body that accredits laboratories to ISO/IEC 17025. UKAS is government-appointed and operates under the Accreditation Regulations 2009. Its register is publicly searchable at ukas.com. A legitimate accreditation claim should produce a result in this register with an active status and a scope that covers the relevant testing methods.

How to Verify

- Note the laboratory name and accreditation number from the COA
- Search ukas.com for the laboratory name and number
- Confirm current status and relevant scope (HPLC, LC-MS)
- Check Companies House (companieshouse.gov.uk) for any corporate connection between the laboratory and the supplier
- If uncertain, contact the laboratory directly using details from its own website to confirm the batch was tested

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HPLC and LC-MS — How Purity Is Measured

HPLC — Purity Measurement

HPLC (High-Performance Liquid Chromatography) measures purity by separating a sample's components as they pass through a column under high pressure. A UV detector measures each component as it elutes from the column; the relative peak area of the main compound versus all other peaks gives the purity percentage.

For peptides, reversed-phase HPLC (RP-HPLC) using a C18 column with UV detection at 214 nm is standard. The result is expressed as a percentage — for example, "98.6% by RP-HPLC." A result below 98% is generally considered insufficient for research-grade material. The methodology must be stated on the COA; a percentage without a method cannot be assessed.

LC-MS — Identity Confirmation

LC-MS (Liquid Chromatography–Mass Spectrometry) adds a mass spectrometer after the chromatographic column. After separation, compounds are ionised and their mass-to-charge ratio (m/z) measured. The result gives the molecular weight of the compound to high precision.

For a peptide COA, the observed molecular weight from LC-MS must correspond to the theoretical molecular weight for the CAS-identified compound. A significant discrepancy (beyond instrument tolerance) indicates either a different compound or substantial structural modification. LC-MS cannot be replaced by HPLC alone: a highly pure sample of the wrong compound will pass HPLC without any flag.

"HPLC answers 'how much?' LC-MS answers 'what is it?' Both questions must be answered."

CHAPTER 06

The MHRA Framework

The Medicines and Healthcare products Regulatory Agency

The MHRA is the UK government agency responsible for regulating medicines and medical devices. It is the competent authority for medicines in the UK, operating under the Medicines Act 1968 and the Human Medicines Regulations 2012 (SI 2012/1916). It assesses applications for marketing authorisation, monitors safety of licensed products, and takes enforcement action against unlicensed supply.

Medicines Act 1968

The foundational statute. It established the licensing framework for medicinal products in the UK. A "medicinal product" is defined broadly — any substance administered to achieve a physiological effect is within scope. Supplying an unlicensed medicinal product is a criminal offence under the Act.

Human Medicines Regulations 2012

The primary secondary legislation implementing and updating the Medicines Act 1968 framework. The HMR 2012 set out detailed requirements for marketing authorisations, manufacturing licences, wholesale dealer licences, and advertising controls. Under HMR 2012, supply of a medicinal product without marketing authorisation is an offence. The RUO label does not exempt a product from these regulations if it is in practice intended for human use.

The RUO Question

Research Use Only (RUO) designation is legitimate for compounds supplied to qualified researchers for genuine laboratory work. The MHRA has issued guidance clarifying that this designation is not a blanket exemption from medicines law. Compounds marketed to consumers with implied therapeutic uses, supplied in human-use formulations, or accompanied by dosing guidance for human administration, may be treated as unlicensed medicines regardless of their RUO label.

Yellow Card

The MHRA Yellow Card scheme (yellowcard.mhra.gov.uk) accepts adverse event reports for unlicensed products including research peptides. Reporting suspected adverse reactions contributes to public health surveillance and MHRA enforcement priorities.

> KEY REFERENCES
>
> Medicines Act 1968 — legislation.gov.uk

Human Medicines Regulations 2012 (SI 2012/1916) — legislation.gov.uk

MHRA guidance on buying medicines online — gov.uk/mhra

MHRA Yellow Card — yellowcard.mhra.gov.uk

CHAPTER 07

Medical Supervision

The Step That Cannot Be Skipped

No verification protocol — however thorough — substitutes for a consultation with a licensed healthcare professional. The quality of a compound's documentation is entirely distinct from the question of whether that compound is appropriate for any specific individual.

A licensed GP, specialist, or clinic can provide guidance in the context of your individual health history, current medications, contraindications, and the specific compound you are researching. This is not a formality — it is a medical question that requires medical expertise. Research peptides can have significant physiological effects, and the absence of licenced-medicine-level quality control makes the case for medical oversight stronger, not weaker.

Where to Seek Guidance in the UK

- **Your GP:** First point of contact for any health-related question. Can refer to specialists if appropriate.
- **Private clinics:** Clinics specialising in longevity, endocrinology, sports medicine, or men's/women's health may have specific expertise relevant to certain research peptide compounds.
- **Specialist pharmacists:** A registered pharmacist can advise on interactions with existing medications and general safety considerations.

> **Important:** Do not use any research peptide without prior consultation with a licensed healthcare professional. This is not optional guidance — it is a fundamental requirement for responsible engagement with this category of compound.

CHAPTER 08

Disclaimers, Sources, and Further Reading

Legal Disclaimer

This guide is provided for educational and informational purposes only. It does not constitute medical advice, legal advice, or any form of professional advice. The information contained herein relates to general principles of peptide verification, analytical chemistry methods, and publicly available MHRA regulatory guidance. It is not tailored to any individual's specific circumstances.

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Medical Disclaimer

Nothing in this guide should be construed as a recommendation to use any research compound. The use of research peptides for human purposes carries risks that are not fully characterised for many compounds. Always consult a licensed healthcare professional before making any decision about research compounds. The MHRA is the authoritative source on the safety and regulation of medicines in the UK.

Sources Cited

- Medicines Act 1968 (legislation.gov.uk)
- Human Medicines Regulations 2012 (SI 2012/1916) (legislation.gov.uk)
- MHRA guidance on buying medicines online (gov.uk/mhra)
- MHRA Yellow Card Scheme (yellowcard.mhra.gov.uk)
- UKAS Register of Accredited Organisations (ukas.com)
- ISO/IEC 17025:2017 — General requirements for the competence of testing and calibration laboratories
- ICH Q2(R1) — Validation of Analytical Procedures (ich.org)
- Accreditation Regulations 2009 (SI 2009/765)

Further Reading

- buypeptideslondon.com/blog/how-to-read-a-peptide-coa-uk/
- buypeptideslondon.com/blog/spotting-counterfeit-peptides/
- buypeptideslondon.com/blog/independent-lab-testing-explained/
- buypeptideslondon.com/blog/mhra-framework-research-peptides-uk/
- buypeptideslondon.com/blog/purity-98-hplc-lc-ms-explained/

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