

Laboratory Risk Assessment

GLP-3 (RT) research peptide

Hazards, safe handling, storage and disposal in an in-vitro research setting

Document ref.	RBL-RA-010	Assessment date	15 September 2026
Revision	Rev. 1.0	Next review	September 2027, or on change of process
Scope	Receipt, storage, bench handling and disposal of lyophilised GLP-3 (RT) and its aqueous solutions	Basis	COSHH Regulations 2002 (as amended); HSE 5-step approach

Research use only. GLP-3 (RT) supplied by Richmond Biolabs is sold strictly for in-vitro laboratory research. It is not a medicine, food, cosmetic or veterinary product. This assessment covers laboratory handling only and makes no reference to, or provision for, administration to humans or animals.

Each peptide has its own risk assessment covering hazards, safe handling, storage and disposal in a laboratory setting.

1 Substance identification

Name	GLP-3 (RT); retatrutide, triple GIP / GLP-1 / glucagon receptor agonist peptide, 39 residues, C-terminal amide
CAS number	2381089-83-2
Molecular formula	C ₂₂₁ H ₃₄₂ N ₄₆ O ₆₈
Molecular weight	4731.4 g/mol
Physical form	White to off-white lyophilised powder in sealed glass vial
Solubility	Limited solubility in PBS (about 0.1–1 mg/mL); the fatty-acid side chain promotes adsorption to plastics and glass at low concentration
Purity (supplied)	≥ 99% by RP-HPLC; identity by mass spectrometry. Batch values on the lot-specific COA

GLP-3 (RT), 39 residues (N → C)

1 Tyr	2 Aib	3 Gln	4 Gly	5 Thr	6 Phe	7 Thr	8 Ser	9 Asp	10 Tyr	11 Ser	12 Ile	13 αMeLeu	14 Leu	15 Asp
16 Lys	17 Lys*	18 Ala	19 Gln	20 Aib	21 Ala	22 Phe	23 Ile	24 Glu	25 Tyr	26 Leu	27 Leu	28 Glu	29 Gly	30 Gly
31 Pro	32 Ser	33 Ser	34 Gly	35 Ala	36 Pro	37 Pro	38 Pro	39 Ser						

Fig. 1 Primary sequence. Shaded: Aib (α-aminoisobutyric acid) at positions 2 and 20, α-methyl-leucine at 13, and Lys* at 17, which carries the C20 fatty diacid via a γGlu-AEEA linker.

2 Hazards

GLP-3 (RT) has no harmonised classification under GB CLP and no Workplace Exposure Limit in HSE EH40. It is a long-acting incretin and glucagon receptor agonist that is pharmacologically active at very low concentrations, so it is handled here as a **potent compound**: dry powder is only opened inside containment and glove changes are more frequent than for general peptides.

Beyond potency, the main risks come from the handling process: sharps and glass, the benzyl alcohol preservative in bacteriostatic diluent, cold-chain packaging, and loss of sample integrity. The lipidated side chain and limited buffer solubility make surface adsorption and incomplete dissolution specific integrity risks.

3 Hazard register

Likelihood (L) and severity (S) are each scored 1–5; risk rating $R = L \times S$. Bands: **1–4 low**, **5–9 medium**, **10–15 high**, **16–25 very high**. Residual ratings assume all listed controls are in place.

Ref	Hazard / activity	Affects	L	S	R	Control measures	L	S	R
H01	Inhalation of potent lyophilised powder Opening vials, weighing, transfer of dry material	Personnel	2	4	8	Dry powder handled only in a Class II MSC or ventilated balance enclosure; never weigh on an open bench. Equilibrate vial unopened. Prefer whole-vial reconstitution over weighing.	1	4	4
H02	Skin or eye contact Reconstitution, pipetting, aliquoting	Personnel	3	3	9	Double nitrile gloves, change outer pair after each handling step. Safety glasses to EN 166, cuffed lab coat. Eyewash within 10 s travel.	1	3	3
H03	Sharps and broken glass Needle transfer through septa, crimp removal, dropped vials	Personnel	3	3	9	Use decrimper, not pliers. Sharps bin at point of use; no recapping. Blunt-fill needles where practical.	2	2	4
H04	Benzyl alcohol in bacteriostatic water (0.9%) Use as diluent	Personnel	2	2	4	Handle as mild irritant. Keep capped; refer to diluent SDS. Use sterile water where preservative is not required by the assay.	1	2	2
H05	Microbial contamination of stock Repeated septum puncture, non-sterile diluent	Sample	3	3	9	Aseptic technique in MSC. Sterile diluent, 0.22 µm PES filtration of stock. Swab septum with 70% IPA before each entry.	1	3	3
H06	Thermal degradation and freeze-thaw loss Storage outside range, repeated thawing	Sample	4	3	12	Store at –20 °C in a logged freezer. Aliquot on first reconstitution; one thaw per aliquot. Record time out of storage.	2	2	4
H07	Moisture uptake by lyophilisate Opening cold vials, humid rooms	Sample	3	2	6	Equilibrate to room temperature before opening. Reseal promptly; hold opened material in a desiccator.	1	2	2
H08	Mislabelling or cross-contamination Several peptides handled in one session	Sample	2	4	8	One compound on the bench at a time. Label every aliquot with lot no., concentration, date, initials. Single-use filter tips.	1	3	3
H09	Cold burns; CO₂ build-up where dry ice is used Unpacking cold-chain shipments, freezer access	Personnel	2	3	6	Cryo gloves for dry ice. Unpack in a ventilated area, never a cold room. Do not seal dry ice in airtight containers.	1	2	2
H10	Spill of solution or powder Bench work, dropped vial	Personnel	3	2	6	Spill kit on bench. Damp-wipe powder (no dry sweeping). Clean with detergent then 70% ethanol.	1	2	2
H11	Release of bioactive material to drain Disposal of residues and consumables	Environment	2	3	6	Collect liquid and solid waste for clinical/chemical incineration via licensed contractor. No drain disposal.	1	2	2
H12	Adsorption and incomplete dissolution Dilute working solutions; buffers near solubility limit	Sample	3	2	6	Low-protein-binding tubes and tips. Check solution is clear before aliquoting. Prepare dilutions immediately before use.	1	2	2

12

hazards assessed

1 → 0

high-rated hazards

7.4 → 2.8

mean risk score

4

highest residual (low)

4 Risk profile

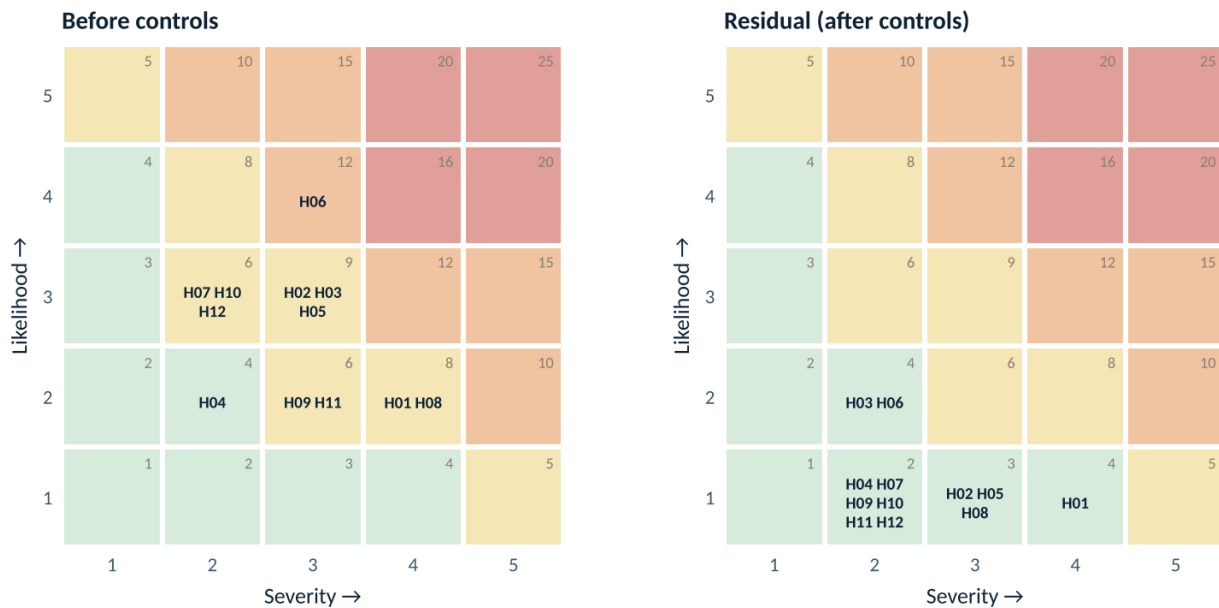


Fig. 2 Position of each hazard on the 5 × 5 matrix before and after controls. No hazard remains above the low band once controls are applied.

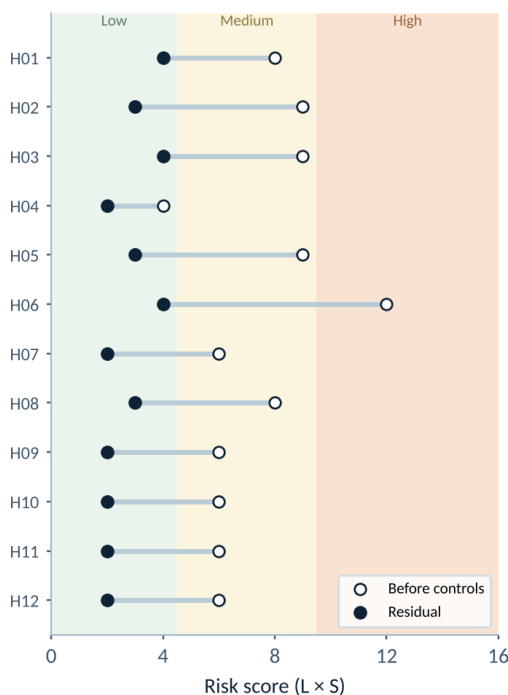


Fig. 3 Risk score per hazard before (open) and after (filled) controls.

Where the controls do most work

The largest reduction is for **H06, thermal degradation and freeze-thaw loss** (12 → 4). Store at -20 °C in a logged freezer.

H01 inhalation of potent lyophilised powder (8), **H02** skin or eye contact (9) and **H03** sharps and broken glass (9) are also brought into the low band, mainly through containment, technique and aseptic working rather than additional PPE.

H01, H03 and H06 keep a residual of 4. That is acceptable, but should be checked at each review against near-miss records and freezer temperature logs.

5 Safe handling and storage

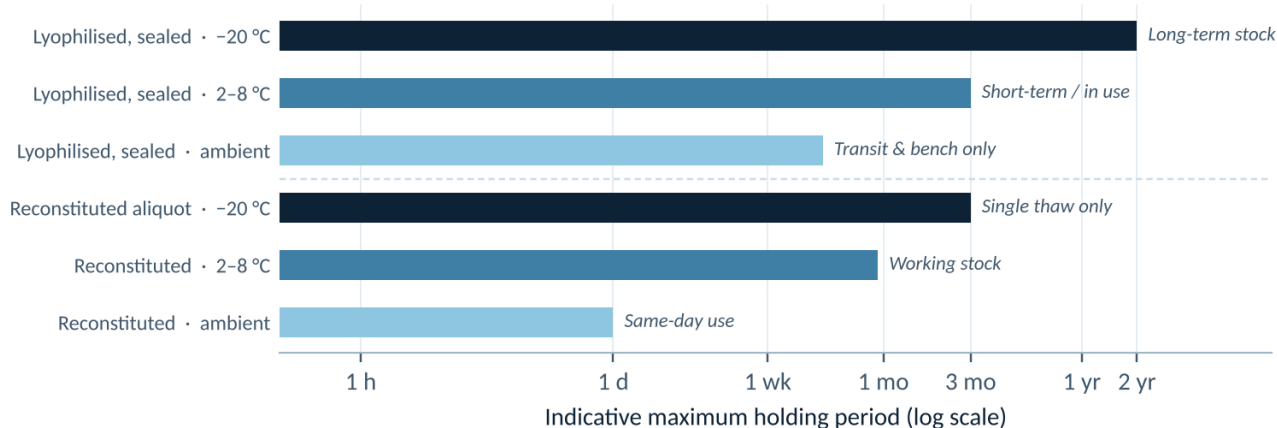


Fig. 4 Indicative holding periods based on general practice for lyophilised research peptides. These are planning limits, not product-specific stability data. Always defer to the lot COA and any in-house stability results.

Store	Sealed vials at -20 °C, protected from light, in a monitored freezer. 2-8 °C acceptable for material in active use.
Open	Let the vial reach room temperature (about 20 min) before opening, to stop condensation forming on the cake.
Reconstitute	Add diluent slowly down the vial wall; swirl, do not vortex or shake. Record diluent, volume, concentration and time.
Aliquot	Split into single-use volumes in low-protein-binding tubes on the day of reconstitution.
Record	Lot number, date opened, and every removal from the freezer, in the sample log.
GLP-3 (RT)	Confirm full dissolution before aliquoting; use low-protein-binding polypropylene for dilute solutions.

6 Spills, accidental exposure and disposal

Powder spill	Do not dry-sweep. Cover with damp absorbent, wipe inwards, clean with detergent then 70% ethanol. Bag as chemical waste.
Solution spill	Absorb with spill pads, clean as above. Report spills over 10 mL to the lab supervisor.
Eye contact	Irrigate at the eyewash for at least 15 minutes, holding lids open. Report and record.
Skin contact	Remove contaminated gloves, wash with soap and water. Report and record.
Needlestick	Encourage bleeding, wash under running water, do not suck the wound. Report immediately to the supervisor.
Disposal	Vials, tips and residual solutions to the chemical/clinical waste stream for incineration by a licensed contractor. Sharps to UN-rated sharps bins. Nothing to drain.

Minimum PPE: nitrile gloves, safety glasses (EN 166), lab coat. Cryogenic gloves and face shield when handling dry ice.

7 Review

Reviewed by	Signature	Last updated
Richmond Biolabs		15 September 2026