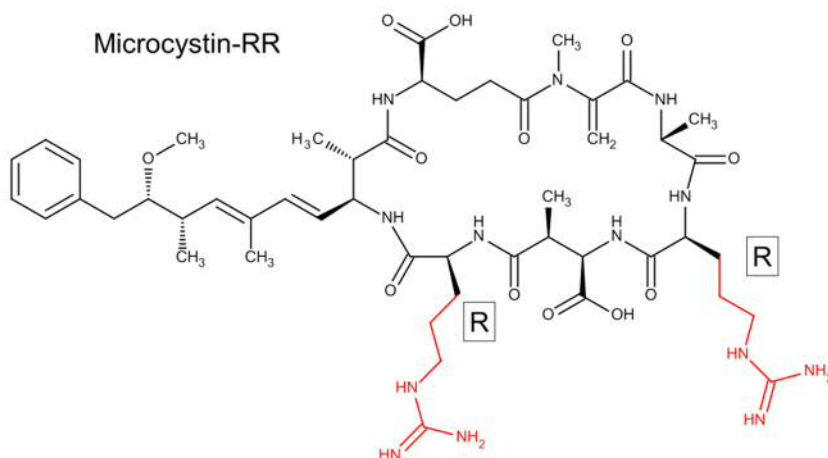


Microcystin-RR

Product Specification

Formula:	C ₄₉ H ₇₅ N ₁₃ O ₁₂
MW:	1038.2
CAS:	111755-37-4
Purity:	≥95% (HPLC)
Identity:	Verified with LC/MS/MS
Appearance:	Clear film adhered to inside of the vial.
Hazard:	Highly irritant, may be carcinogenic, hepatotoxic.
Stability:	≥ 1 year at -20°C



Handling

Microcystin-RR is provided as a dried film in an amber vial, at the specified mass purchased and shown on the vial. It may not be visible in the vial, and should be dissolved in methanol or ethanol at a concentration no less than 75% organic solvent, with repeated rinsing of the sides of the vial with a pipet tip to fully dissolve the product. For biological applications, dissolved toxin should be diluted in an appropriate buffer for the application, reducing the organic solvent content to a level that it will not impact the application. For HPLC or other chemical applications, it should be diluted in an appropriate solvent or mobile phase. Once dissolved in the original organic solvent, the product is stable for ≥1 year when stored at -20°C.

Background

Microcystin-RR is one of over 80 types of Microcystins, cyclic heptapeptides that have been shown to be liver toxins, and which are produced by *Microcystis aeruginosa* and other cyanobacteria. Microcystins have a unique β amino acid side chain termed “Adda,” and variability at the second and fourth amino acid positions in the Adda sequence is the basis of Microcystin nomenclature (e.g., LR, LW, RR, YR, etc.). Adda is required for full biological toxicity. The cytotoxicity of Microcystins relates to their inhibitory effects upon protein phosphatases. Microcystin-RR has been previously shown to inhibit protein phosphatases 1 and 2A, with less than half the potency of Microcystin-LR (3.4 nM for –RR, 1.6 nM for –LR, Yoshizawa *et al.*, J. Cancer. Res. Clin. Oncol. [1990] 116:609-614). In a more specific enzyme assay, Microcystin-RR was a slightly weaker inhibitor of PP2A than Microcystin-LR (with IC₅₀ values of 0.78 and 0.28 nM, respectively, Nishiwaki-Matsushima *et al.* Jpn. J. Cancer Res [1991] 82:993-996). Microcystin-RR has been found to be slightly less toxic than Microcystin-LR in mouse studies with dosing via intraperitoneal injection, where RR yielded an LD₅₀ of 235 compared to 43 μg/kg for Microcystin-LR (Gupta *et al.*, Toxicology [2003] 188:285-296).