

Product Name: WRW4
Cat. No.: GC10691

Cas. No. 878557-55-2

Chemical Name	(S,Z)-2-((Z)-((S)-2-amino-1-hydroxy-3-(1H-indol-3-yl)propylidene)amino)-5-guanidino-N-((S,Z)-1-hydroxy-1-(((S,Z)-1-hydroxy-1-(((S,Z)-1-hydroxy-1-(((S)-1-hydroxy-1-imino-3-(1H-indol-3-yl)propan-2-yl)imino)-3-(1H-indol-3-yl)propan-2-yl)imino)-3-(1H-indol-3-
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SMILES N[C@@]/C(O)=N/[C@@]/C(O)=N/[C@@]/C(O)=N/[C@@]/C(O)=N/[C@@]/C(O)=N/[C@@](C(O)=N)([H])CC1=CNC2=CC=CC=C12)([H])CC3=CNC4=CC=CC=C34)([H])C5=CNC6=CC=CC=C56)([H])CC7=CNC8=CC=CC=C78)([H])CCCN(C(N)=N)([H])CC9=CNC%10=CC=CC=C9%10

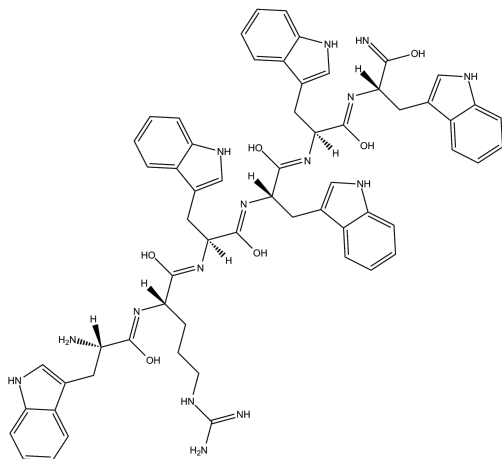
Formula	C ₆₁ H ₆₅ N ₁₅ O ₆	M.Wt	1104.28
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Solubility	Soluble to 1 mg/ml in Water	Storage	Desiccate at -20°C
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General tips	For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.
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Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.
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Structure



Caution: Product has not been fully validated for medical applications. For research use only.

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Address: 10292 Central Ave. #205, Montclair, CA, USA

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Cell experiment [1]:

Cell lines	Organotypic hippocampal cultures (OHCs)
Preparation Method	OHCs obtained from WT and KO FPR2 ^{-/-} mice were pretreated for 30min with the FPR2 antagonist WRW4 (10μM). Then, MR-39 (1μM) was added for 1h, and OHCs were stimulated for 24h with fibrillary or oligomeric amyloid β (Aβ ₁₋₄₂ ; 10μM). Control (unstimulated) OHCs were treated with PBS.
Reaction Conditions	10μM; 30min
Applications	WRW4 reverses the potential of MR-39 to alleviate Aβ-induced inflammatory response in OHCs.

Animal experiment [2]:

Animal models	C57BL/6 mice
Preparation Method	Animals were distributed in 8 experimental groups: Control, Carrageenan (CG), pre- or post-treated with Ac9-12 or WKYMV, pre-treated with WRW4+Ac9-12 or WRW4+WKYMV. Peritonitis was induced by intraperitoneal (i.p.) injection of 1.0mL of 0.3% carrageenan solution diluted in sterile saline, whereas control mice received saline solution only. To determine the therapeutic efficacy of the synthetic peptides in this model, mice received carrageenan by i.p. 15min before or after i.p. peptide treatments (100μg/animal of Ac9-12 or WKYMV with or without WRW4 at 10μg/animal) diluted in 0.1mL of saline solution. After 3h, the animals were euthanized to collect the peritoneal lavage.
Dosage form	10μg, 0.1mL; i.p.

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Applications WRW4 reverses the anti-inflammatory effect of WKYMV.

References:

- [1] Trojan, Ewa, et al. The N-formyl peptide receptor 2 (FPR2) agonist MR-39 improves ex vivo and in vivo amyloid beta (1–42)-induced neuroinflammation in mouse models of Alzheimer's disease. *Molecular neurobiology* 58.12 (2021): 6203-6221.
- [2] Lice, Izabella, et al. Effects of formyl peptide receptor agonists ac9-12 and WKYMV in in vivo and in vitro acute inflammatory experimental models. *Cells* 11.2 (2022): 228.

Background

WRW4 is a selective antagonist of formyl peptide receptor 2 (FPR2, formerly known as FPRL1), which is a synthetic C-terminal amidated hexapeptide, its IC₅₀ value for inhibiting the binding of WKYMVm to FPRL2 is 0.23 μM^[1, 2]. WRW4 can inhibit intracellular calcium release and ERK phosphorylation induced by FPR2 agonists (such as WKYMVm, MMK-1, Aβ42, and F peptide), thereby suppressing downstream responses such as chemotaxis, peroxide production, and Aβ42 internalization^[3, 4]. WRW4 can alleviate cognitive decline caused by diabetes in mice^[5].

In vitro, pretreatment of organotypic hippocampal cultures (OHCs) with WRW4 (10μM) for 30min reversed the anti-inflammatory effect of MR-39 on Aβ-induced inflammation in OHCs^[6].

In vivo, WRW4 (10μg, 0.1mL) reversed the anti-inflammatory effect of WKYMV by intraperitoneal injection in mice with experimental peritonitis^[7].

References:

- [1] Skovbakke, Sarah L., et al. The role of formyl peptide receptors for immunomodulatory activities of antimicrobial peptides and peptidomimetics. *Current pharmaceutical design* 24.10 (2018): 1100-1120.
- [2] Shin, Eun Ha, et al. Trp-Arg-Trp-Trp-Trp-Trp antagonizes formyl peptide receptor like 2-mediated signaling. *Biochemical and biophysical research communications* 341.4 (2006): 1317-1322.
- [3] Bae, Yoe-Sik, et al. Identification of peptides that antagonize formyl peptide receptor-like 1-mediated signaling. *The Journal of Immunology* 173.1 (2004): 607-614.
- [4] Cattaneo, Fabio, Melania Parisi, and Rosario Ammendola. Distinct signaling cascades elicited by

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different formyl peptide receptor 2 (FPR2) agonists. International journal of molecular sciences 14.4 (2013): 7193-7230.

[5] Uno, Hiroki, Takahide Itokazu, and Toshihide Yamashita. Formyl peptide receptor 2 antagonist WRW4 ameliorates diabetes-induced cognitive decline in mice. Neuroscience Research (2025): 104932.

[6] Trojan, Ewa, et al. The N-formyl peptide receptor 2 (FPR2) agonist MR-39 improves ex vivo and in vivo amyloid beta (1–42)-induced neuroinflammation in mouse models of Alzheimer's disease. Molecular neurobiology 58.12 (2021): 6203-6221.

[7] Lice, Izabella, et al. Effects of formyl peptide receptor agonists ac9-12 and WKYMV in in vivo and in vitro acute inflammatory experimental models. Cells 11.2 (2022): 228.

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