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**Product Data Sheet**


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Product Name:  $\omega$ -Conotoxin GVIA

Cat. No.: GC13886

**Chemical Properties**

Cas. No. 106375-28-4

SMILES C[C@](O)([H])[C@@](/N=C(O)/[C@](/N=C(O)/[C@]1([H])C[C@](O)([H])CN12)([H])CC3=CC=C(O)C=C3)([H])/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](C(O)=N)([H])CC4=CC=C(O)C=C4)([H])CSSC[C@@](N=C(O)[C@](N=C(O)[C@](N=C(O)[C@](N=C(O)[C@](N=C(O)[C@]5([H])C[

Formula C<sub>120</sub>H<sub>182</sub>N<sub>38</sub>O<sub>43</sub>S<sub>6</sub>

M.Wt 3037.35

Solubility Soluble to 1 mg/ml in Water

Storage Desiccate at -20°C

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.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.

Structure **Protocol****Cell experiment [1]:**

Cell lines

Rat pituitary melanotropic cells

Preparation Method

$\omega$ -Conotoxin GVIA was administered via a gravity-driven Y-tube system or pressure jet. The recording chamber was continuously perfused at a rate of ~ 1.5ml/min, driven by air pressure, and the bath volume was kept constant by continuous suction. Electrophysiological testing was performed.

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

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Reaction Conditions 1 or 10  $\mu$ M

Applications

1  $\mu$ M  $\omega$ -Conotoxin GVIA blocked the high voltage-activated current by  $25.5 \pm 3.6\%$ . The block at 10  $\mu$ M  $\omega$ -Conotoxin GVIA was  $22.9 \pm 2.5\%$  (not significantly different from the block by 1  $\mu$ M;  $n = 3$ ), indicating that  $\omega$ -Conotoxin GVIA yields a saturating effect.

**Animal experiment [2]:**

Animal models

male COBS CD (SD) rats

Preparation Method

After intravenous injection of different doses of  $\omega$ -Conotoxin GVIA (1--2 nmol/kg) in rats, the sciatic nerve of the rats was stimulated and the blood pressure of the rats was measured through the carotid artery.

Dosage form

Intravenous injection, 1--2 nmol/kg

Applications

Intravenous injection caused a progressive loss of tension development of tibialis muscle indirectly evoked by the electrical stimulation of the sciatic nerve,  $\omega$ -Conotoxin GVIA (1 nmol/kg i.v.) reduced the strength of muscle contraction by 75% in about 27 min (from  $39.5 \pm 1.8$  g to  $9.9 \pm 0.4$  g).

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### References:

[1]: H.D. Mansvelder, J.C. Stoof, K.S. Kits. Dihydropyridine block of  $\omega$ -agatoxin IVA- and  $\omega$ -conotoxin GVIA-sensitive  $Ca^{2+}$  channels in rat pituitary melanotropic cells. Eur. J. Pharmacol., 311 (1996), pp. 293-304

[2]: Rossoni G, Berti F, La Maestra L, Clementi F.  $\omega$ -Conotoxin GVIA binds to and blocks rat neuromuscular junction. Neuroscience Letters. 1994;176:185-188.

### Background

$\omega$ -Conotoxin GVIA is a cone snail toxin that selectively blocks N-type channels in neurons [1].

$\omega$ -Conotoxin GVIA binds to human neocortical, rat hippocampal, and chick brain synaptic plasma membranes ( $IC_{50}$ s = 4.6, 60, and 150 pM, respectively, in radioligand binding assays) [3,4,5].

$\omega$ -Conotoxin GVIA markedly reduced the amplitude of the tetanic contractions of the tibialis anterior muscle in mice, but tetanic facilitation was not impaired. The muscle contractions elicited by direct electrical stimulation were not significantly modified by  $\omega$ -Conotoxin GVIA.  $\omega$ -Conotoxin GVIA did not have any significant changes in systemic blood pressure [5].

### References:

[1]. H.D. Mansvelder, J.C. Stoof, K.S. Kits. Dihydropyridine block of  $\omega$ -agatoxin IVA- and  $\omega$ -conotoxin GVIA-sensitive  $Ca^{2+}$  channels in rat pituitary melanotropic cells. Eur. J. Pharmacol., 311 (1996), pp. 293-304

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- [2]. Feuerstein, T.J., Dooley, D.J., and Seeger, W. Inhibition of norepinephrine and acetylcholine release from human neocortex by  $\omega$ -conotoxin GVIA. *J. Pharmacol. Exp. Ther.* 252(2), 778-785 (1990).
- [3]. Lampe, R.A., Lo, M.M., Keith, R.A., et al. Effects of site-specific acetylation on  $\omega$ -conotoxin GVIA binding and function. *Biochemistry* 32(13), 3255-3260 (1993).
- [4]. Sato, K., Park, N.G., Kohno, T., et al. Role of basic residues for the binding of  $\omega$ -conotoxin GVIA to N-type calcium channels. *Biochem. Biophys. Res. Commun.* 194(3), 1292-1296 (1993).
- [5]: Rossoni G, Berti F, La Maestra L, Clementi F.  $\omega$ -Conotoxin GVIA binds to and blocks rat neuromuscular junction. *Neuroscience Letters.* 1994;176:185-188.

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