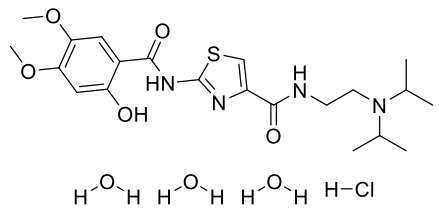
Product data sheet

MedKoo Cat#: 314263 Name: Acotiamide hydrochloride trihydrate CAS#: 773092-05-0 (HCl hydrate) Chemical Formula: $C_{21}H_{37}ClN_4O_8S$ Molecular Weight: 541.06	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Acotiamide, also known as YM-443 and Z-338, is a drug approved in Japan for the treatment of postprandial fullness, upper abdominal bloating, and early satiation due to functional dyspepsia. It acts as an acetylcholinesterase inhibitor. Note: The Approved drug API is a cotiamide HCl trihydrate (1:1:3)

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	112.5	207.93
Ethanol	20.0	36.96
Water	5.0	9.24

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	1.85 mL	9.24 mL	18.48 mL
5 mM	0.37 mL	1.85 mL	3.70 mL
10 mM	0.18 mL	0.92 mL	1.85 mL
50 mM	0.04 mL	0.18 mL	0.37 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Yamawaki H, Futagami S, Sakasegawa N, Murakami M, Agawa S, Ikeda G, Noda H, Kirita K, Gudis K, Higuchi K, Kodaka Y, Ueki N, Iwakiri K. Acotiamide attenuates central urocortin 2-induced intestinal inflammatory responses, and urocortin 2 treatment reduces TNF-α productions in LPS-stimulated macrophage cell lines. Neurogastroenterol Motil. 2020 Aug;32(8):e13813. doi: 10.1111/nmo.13813. Epub 2020 Feb 7. PMID: 32030855.

In vivo study

1. Hashimoto K, Tashima K, Imai T, Matsumoto K, Horie S. The rodent model of impaired gastric motility induced by allyl isothiocyanate, a pungent ingredient of wasabi, to evaluate therapeutic agents for functional dyspepsia. J Pharmacol Sci. 2021 Jan;145(1):122-129. doi: 10.1016/j.jphs.2020.10.006. Epub 2020 Nov 11. PMID: 33357770.
2. Akaike H, Jang II, Hori N, Ogawa S, Ito Y, Akaike N. Effects of Z-338, a novel gastroprokinetic agent, on the actions of excitatory and inhibitory neurotransmitters on neurons in area postrema. J Smooth Muscle Res. 2010;46(1):31-47. doi: 10.1540/jsmr.46.31. PMID: 20383032.

7. Bioactivity
Biological target:

Product data sheet

Acotiamide monohydrochloride trihydrate enhances acetylcholine released by enteric neurons through muscarinic receptor antagonism and acetylcholinesterase (AChE) inhibition.

In vitro activity

TNF-α production in 1 μg/mL LPS-stimulated NR8383 cells treated with MCP-1 (100 pg/mL) was significantly elevated compared to that in LPS (1 μg/mL)-stimulated NR8383 cells (Figure 7A) ($P < .01$). Interestingly, acotiamide treatment (10, 30, and 100 μmol/L) significantly reduced TNF-α productions in LPS (1 μg/mL)-stimulated NR8383 cells treated with MCP-1 (100 pg/mL) (Figure 7A) ($P < .05$, respectively). IL-6 production in LPS (1 μg/mL)-stimulated NR8383 cells treated with MCP-1 (100 pg/ml) was significantly elevated compared to that in LPS (1 μg/mL)-stimulated NR8383 cells (Figure 7B) ($P < .05$). Interestingly, 30 μmol/L treatment with acotiamide significantly reduced IL-6 production in 1 μg/mL LPS-stimulated NR8383 cells treated with MCP-1 (100 pg/mL) (Figure 7B) ($P < .05$), and then, IL-4 productions were not increased in LPS alone or LPS-stimulated NR8383 cells treated with MCP-1 (Figure 7C).

Reference: Neurogastroenterol Motil. 2020 Aug;32(8):e13813. https://pubmed.ncbi.nlm.nih.gov/32030855/

In vivo activity

As shown in Fig. 3A, Z-338 (10 μM) markedly enhanced the frequency of spontaneous unit discharges in AP rat neurons with relatively low (<1~2 unit discharges/sec) firing rates. The acceleratory effect of Z-338 was reversible, although the effects lasted for prolonged period (more than 1 hour) after wash out of Z-338. In neurons with relatively higher firing rates (>3~5 unit discharges/sec), on the other hand, Z-338 showed little effect on the firing rates (Fig. 3B).

Reference: J Smooth Muscle Res. 2010;46(1):31-47. https://www.jstage.jst.go.jp/article/jsmr/46/1/46_1_31/_pdf/-char/en

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.