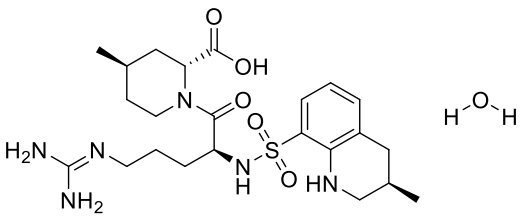
Product data sheet

MedKoo Cat#: 319512 Name: Argatroban hydrate CAS#: 141396-28-3 (hydrate) Chemical Formula: $C_{23}H_{38}N_6O_6S$ Exact Mass: 508.24679 Molecular Weight: 526.653	
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:

Argatroban is an anticoagulant that is a direct thrombin inhibitor. Argatroban was approved in 2000 for prophylaxis or treatment of thrombosis in patients with heparin-induced thrombocytopenia (HIT). Argatroban is a direct thrombin inhibitor that reversibly binds to the thrombin active site. Argatroban exerts its anticoagulant effects by inhibiting thrombin-catalyzed or -induced reactions, including fibrin formation; activation of coagulation factors V, VIII, and XIII; activation of protein C; and platelet aggregation. Argatroban inhibits thrombin with an inhibition constant (Ki) of 0.04 μM.

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	100.0	189.88
Ethanol	40.0	75.95

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.90 mL	9.49 mL	18.99 mL
5 mM	0.38 mL	1.90 mL	3.80 mL
10 mM	0.19 mL	0.95 mL	1.90 mL
50 mM	0.04 mL	0.19 mL	0.38 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. Song J, Jiang N, Gan X, Zhi W, Zhu Z. Thrombin inhibitor argatroban modulates bone marrow stromal cells behaviors and promotes osteogenesis through canonical Wnt signaling. Life Sci. 2021 Mar 15;269:119073. doi: 10.1016/j.lfs.2021.119073. Epub 2021 Jan 15. PMID: 33460666.
2. Raaz U, Kaeberich A, Maegdefessel L, Buerke M, Busshardt M, Schubert S, Russ M, Plehn A, Ebelt H, Werdan K, Schlitt A. The direct thrombin inhibitor argatroban effectively prevents cardiac catheter thrombosis in vitro. Thromb Haemost. 2010 Apr;103(4):808-14. doi: 10.1160/TH09-07-0456. Epub 2010 Feb 19. PMID: 20174756.

In vivo study

1. Bulani Y, Sharma SS. Argatroban Attenuates Diabetic Cardiomyopathy in Rats by Reducing Fibrosis, Inflammation, Apoptosis, and Protease-Activated Receptor Expression. Cardiovasc Drugs Ther. 2017 Jun;31(3):255-267. doi: 10.1007/s10557-017-6732-3. PMID: 28695302.

2. Lyden P, Pereira B, Chen B, Zhao L, Lamb J, Lei IF, Rajput P. Direct thrombin inhibitor argatroban reduces stroke damage in 2 different models. Stroke. 2014 Mar;45(3):896-9. doi: 10.1161/STROKEAHA.113.004488. Epub 2014 Jan 28. PMID: 24473182; PMCID: PMC3995814.

7. Bioactivity

Biological target:

Argatroban (monohydrate) (MD-805 (monohydrate)) is a direct, selective thrombin inhibitor.

In vitro activity

To evaluate whether this small molecule compound can promote alveolar BMSC osteogenesis in vivo, this study established a periodontal disease model around the mouse maxillary 1st molar to induce bone degeneration, then injected vehicle or different doses of argatroban every other day (n = 4). After 2 weeks, alveolar bone volume was examined by micro-CT and histomorphometry. Without argatroban treatment, the alveolar bone loss volume between the first molar (M1) and second molar (M2) was larger than treated group (Fig. 1a). To evaluate the alveolar bone resorption and regeneration in vivo, relative height of alveolar crests were measured using the average distance between the cemento-enamel junction (CEJ) to the alveolar crest from the first molar and second molar (shown by green line in Fig. 1a). The distance from CEJ to bone crest was significantly longer in vehicle group than treated group (Fig. 1b). Lower dose of argatroban (1 μg) attenuated alveolar bone loss caused by periodontal disease.

Reference: Life Sci. 2021 Mar 15;269:119073. https://pubmed.ncbi.nlm.nih.gov/33460666/

In vivo activity

Four-week treatment of argatroban (0.3 and 1 mg/kg) significantly reduced plasma glucose, cholesterol, and glycated hemoglobin level when compared with T2DM animals whereas plasma insulin level was improved significantly with argatroban 1 mg/kg. Argatroban did not significantly affect the body weight of the diabetic rats. There was even no significant change in any of the parameters in the argatroban per se group (Fig. 1a–e).

Reference: Cardiovasc Drugs Ther. 2017 Jun;31(3):255-267. https://pubmed.ncbi.nlm.nih.gov/28695302/

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.