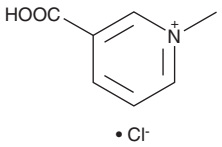
PRODUCT INFORMATION

Trigonelline (chloride)

Item No. 11904

CAS Registry No.:	6138-41-6
Formal Name:	3-carboxy-1-methyl-pyridinium, monochloride
Synonym:	N-methyl Nicotinic Acid Betaine
MF:	$C_7H_8NO_2$ • Cl
FW:	173.6
Purity:	≥95%
UV/Vis.:	λ_{max}: 265 nm
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥4 years
Item Origin:	Plant/*Trigonella foenum*



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Trigonelline (chloride) is supplied as a crystalline solid. Aqueous solutions of trigonelline (chloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of trigonelline (chloride) in PBS (pH 7.2) is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Trigonelline is an alkaloid that has been found in *L. japonicus* and an active metabolite of niacin that has diverse biological activities.[1-4] It increases levels of the brown fat marker proteins PRDM16, PGC-1α, and UCP1 in 3T3-L1 adipocytes when used at a concentration of 75 µM.[1] Trigonelline inhibits degranulation of, and decreases the production of IL-6 and TNF-α in, activated primary mouse bone marrow mast cells (BMMCs).[2] *In vivo*, trigonelline (200 mg/kg) reduces serum IgE levels, pulmonary immune cell infiltration, and mucus secretion in a mouse model of ovalbumin-induced allergic asthma. It reduces serum levels of IL-1β, IL-6, IL-18, and malondialdehyde (MDA) and renal cell apoptosis, as well as increases protein levels of peroxisome proliferator-activated receptor γ (PPARγ) in a rat model of high-fat diet- and streptozotocin-induced type 2 diabetic nephropathy when administered at a dose of 40 mg/kg.[3] Trigonelline (50 mg/kg) reduces hepatic *de novo* lipogenesis, induces hepatic autophagy, and prevents weight gain, insulin resistance, and hepatic steatosis in a mouse model of high-cholesterol and high-fat diet-induced non-alcoholic fatty liver disease (NAFLD).[4]

References

1. Choi, M., Mukherjee, S., and Yun, J.W. Trigonelline induces browning in 3T3-L1 white adipocytes. *Phytother Res.* **35(2)**, 1113-1124 (2021).
2. Zhang, W., Zhang, Y., Chen, S., *et al.* Trigonelline, an alkaloid from *Leonurus japonicus* Houtt., suppresses mast cell activation and OVA-induced allergic asthma. *Front. Pharmacol.* **12**, 687970 (2021).
3. Li, Y., Li, Q., Wang, C., *et al.* Trigonelline reduced diabetic nephropathy and insulin resistance in type 2 diabetic rats through peroxisome proliferator-activated receptor-γ. *Exp. Ther. Med.* **18(2)**, 1331-1337 (2019).
4. Sharma, L., Lone, N.A., Knott, R.M., *et al.* Trigonelline prevents high cholesterol and high fat diet induced hepatic lipid accumulation and lipo-toxicity in C57BL/6J mice, via restoration of hepatic autophagy. *Food Chem. Toxicol.* **121**, 283-296 (2018).

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