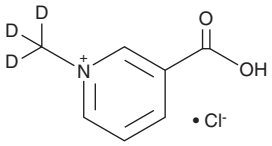
PRODUCT INFORMATION

Trigonelline-d_3 (chloride)

Item No. 36340

Formal Name:	3-carboxy-1-(methyl-d_3)-pyridinium, monochloride
Synonym:	N-methyl Nicotinic Acid Betaine-d_3
MF:	$C_7H_5D_3NO_2$ • Cl
FW:	176.6
Chemical Purity:	≥95% (Trigonelline)
Deuterium Incorporation:	≥99% deuterated forms (d_1-d_3); ≤1% d_0
Supplied as:	A solid
Storage:	-20°C
Stability:	≥4 years
Item Origin:	Synthetic



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

Laboratory Procedures

Trigonelline-d_3 (chloride) is intended for use as an internal standard for the quantification of trigonelline (Item No. 11904) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

Trigonelline-d_3 (chloride) is supplied as a solid. A stock solution may be made by dissolving the trigonelline-d_3 (chloride) in the solvent of choice, which should be purged with an inert gas. Trigonelline-d_3 (chloride) is soluble in the organic solvent DMSO. Trigonelline-d_3 (chloride) is slightly soluble in ethanol and dimethyl formamide.

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. *Phytother Res.* **35(2)**, 1113-1124 (2021).
2. Zhang, W., Zhang, Y., Chen, S., *et al. Front. Pharmacol.* **12**, 687970 (2021).
3. Li, Y., Li, Q., Wang, C., *et al. Exp. Ther. Med.* **18(2)**, 1331-1337 (2019).
4. Sharma, L., Lone, N.A., Knott, R.M., *et al. Food Chem. Toxicol.* **121**, 283-296 (2018).

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