

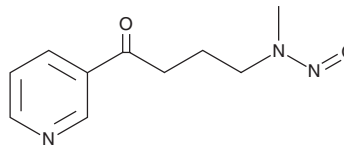
PRODUCT INFORMATION



4-(Methylnitrosamino)-1-(3-pyridyl)-1-butanone

Item No. 16414

CAS Registry No.: 64091-91-4
Formal Name: 4-(methylnitrosoamino)-1-(3-pyridinyl)-1-butanone
Synonym: NNK
MF: C₁₀H₁₃N₃O₂
FW: 207.2
Purity: ≥98%
UV/Vis.: λ_{max}: 229 nm
Supplied as: A solid
Storage: -20°C
Stability: ≥4 years



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

Laboratory Procedures

4-(Methylnitrosamino)-1-(3-pyridyl)-1-butanone is supplied as a solid. A stock solution may be made by dissolving the 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone in the solvent of choice, which should be purged with an inert gas. 4-(Methylnitrosamino)-1-(3-pyridyl)-1-butanone is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone in ethanol and DMSO is approximately 25 mg/ml and approximately 30 mg/ml in DMF.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone can be prepared by directly dissolving the solid in aqueous buffers. The solubility of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone in PBS, pH 7.2, is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

4-(Methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) is a tobacco-specific nitrosamine carcinogen.¹ Reactive metabolites of NNK alkylate DNA, forming pyridyloxobutyl (POB) and pyridylhydroxybutyl (PHB) adducts, and induce DNA methylation. NNK (100 mg/kg, single dose) increases the protein levels of DNA methyltransferase 1 (DNMT1) in mouse bronchial epithelial cells within one day and increases hypermethylation of the tumor suppressor genes *Chd13*, *Prdm2*, and *Runx3* in lung tissue within three days.² It induces tumor formation preferentially in the lung *via* various routes of administration in animal models.³ NNK induces adenomas and adenocarcinomas, which are present after 16 and 50 weeks, respectively, in mouse lung when administered at a single dose of 10 μmol/animal. Lifetime administration of NNK (63.5 mg/animal) to rats results in a 90% incidence of lung tumors.⁴

References

1. Carlson, E.S., Upadhyaya, P., Villalta, P.W., et al. *Chem. Res. Toxicol.* **31**(5), 358-370 (2018).
2. Jin, H., Chen, J.X., Wang, H., et al. *Nutr. Cancer* **67**(1), 167-176 (2016).
3. Hecht, S.S. *Chem. Res. Toxicol.* **11**(6), 559-603 (1998).
4. Rivenson, A., Hoffmann, D., Prokopczyk, B., et al. *Cancer Res.* **48**(23), 6912-6917 (1988).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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CAYMAN CHEMICAL

1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA

PHONE: [800] 364-9897
[734] 971-3335

FAX: [734] 971-3640

CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM