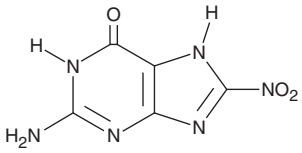
# PRODUCT INFORMATION

## 8-Nitroguanine

*Item No. 89295*

**CAS Registry No.:** 168701-80-2
**Formal Name:** 2-amino-1,9-dihydro-8-nitro-6H-purin-6-one
**MF:** $C_5H_4N_6O_3$
**FW:** 196.1
**Purity:** ≥95%
**UV/Vis.:** $\lambda_{max}$: 397 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

8-Nitroguanine is supplied as a solid. A stock solution may be made by dissolving the 8-nitroguanine in the solvent of choice. 8-Nitroguanine is soluble in 1 M sodium hydroxide at a concentration of approximately 50 mg/ml.

### Description

8-Nitroguanine is a nitrative guanine derivative formed by oxidative damage to the guanine base in DNA by reactive nitrogen species (RNS) during inflammation and *in vitro* by reaction of DNA with peroxynitrite and other RNS reagents.[1-3] It is mutagenic and induces G:C to T:A transversion in DNA. Incorporation of 8-nitroguanine as an 8-nitroG:anti-G base pair into a primer template stalls human DNA polymerase β and induces a 2:1 preference for deoxyadenosine (dA) insertion over deoxycytosine (dC).[3] 8-Nitroguanine levels are increased in the lung tissue of mice with conditional expression of mutant K-Ras(G12V) that developed lung adenocarcinoma and in the lung tissue and peripheral lymphocyte DNA of cigarette smoke-exposed rats.[4,5] It is also increased in the lung tissue of influenza- or Sendai virus-infected mice and the colon epithelial cells of mice in an inflammatory bowel disease (IBD) model.[6,7]

### References


1. Hiraku, Y. Formation of 8-nitroguanine, a nitrative DNA lesion, in inflammation-related carcinogenesis and its significance. *Environ. Health Prev. Med.* **15(2)**, 63-72 (2010).
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3. Bhamra, I., Compagnone-Post, P., O'Neil, I.A., *et al.* Base-pairing preferences, physicochemical properties and mutational behaviour of the DNA lesion 8-nitroguanine. *Nucleic Acids Res.* **40(21)**, 11126-11138 (2012).
4. Ohnishi, S., Saito, H., Suzuki, N., *et al.* Nitrative and oxidative DNA damage caused by K-ras mutation in mice. *Biochem. Biophys. Res. Commun.* **413(2)**, 236-240 (2011).
5. Hsieh, Y.-S., Chen, B.-C., Shiow, S.-J., *et al.* Formation of 8-nitroguanine in tobacco cigarette smokers and in tobacco smoke-exposed Wistar rats. *Chem. Biol. Interact.* **140(1)**, 67-80 (2002).
6. Akaike, T., Okamoto, S., Sawa, T., *et al.* 8-nitroguanosine formation in viral pneumonia and its implication for pathogenesis. *Proc. Natl. Acad. Sci. U.S.A.* **100(2)**, 685-690 (2003).
7. Ding, X., Hiraku, Y., Ma, N., *et al.* Inducible nitric oxide synthase-dependent DNA damage in mouse model of inflammatory bowel disease. *Cancer Sci.* **96(3)**, 157-163 (2005).





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