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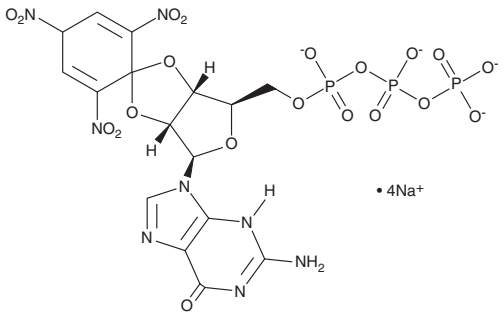
PRODUCT INFORMATION

TNP-GTP (sodium salt)

Item No. 38570

Formal Name:	2′,3′-O-(2,4,6-trinitro-2,4-cyclohexadien-1-ylidene)-guanosine 5′-(tetrahydrogen triphosphate), tetrasodium salt
Synonym:	TNP-Guanosine 5'-triphosphate
MF:	$C_{16}H_{13}N_8O_{20}P_3 \bullet 4Na$
FW:	822.2
Purity:	≥95%
Ex./Em. Max:	470/552 nm
Supplied as:	A solution in water
Storage:	-80°C
Stability:	≥2 years



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

Description

TNP-GTP is a fluorescent derivative of the energy substrate for protein synthesis and gluconeogenesis, guanosine 5'-triphosphate (GTP; Item No. 16060).[1] It displays an emission maximum of 552 nm upon excitation at 410 nm in water, with fluorescence increasing in intensity and shifting to 544 and 532 nm in 40 and 80% N,N-dimethylformamide, respectively, which is less polar than water.[1] TNP-GTP is an inhibitor of glutamate dehydrogenase (K_i = 2.7 µM). When bound to glutamate dehydrogenase, the fluorescence intensity of TNP-GTP is increased and the emission shifts from 552 to 545 nm, an effect that can be blocked by addition of GTP. TNP-GTP is an antagonist of the purinergic $P2X_2$ and $P2X_{2/3}$ receptors (IC_{50}s = 0.4 and 1.2 nM, respectively).[2] It also selectively inhibits rat soluble guanylyl cyclase (sGC; K_i = 11 nM) over bovine liver glutamate dehydrogenase (GDH; K_i = 2.7 µM) and the calmodulin-dependent *B. pertussis* adenylyl cyclase (AC) toxin (K_is = 20 and 320 µM in the presence of manganese or magnesium, respectively).[1,3,4]

References

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2. Virginio, C., Robertson, G., Surprenant, A., *et al.* Trinitrophenyl-substituted nucleotides are potent antagonists selective for $P2X_1$, $P2X_3$, and heteromeric $P2X_{2/3}$ receptors. *Mol. Pharmacol.* **53(6),** 969-973 (1998).
3. Dove, S., Danker, K.Y., Stasch, J.-P., *et al.* Structure/activity relationships of (M)ANT- and TNP-nucleotides for inhibition of rat soluble guanylyl cyclase $\alpha_1\beta_1$. *Mol. Pharmacol.* **85(4),** 598-607 (2014).
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