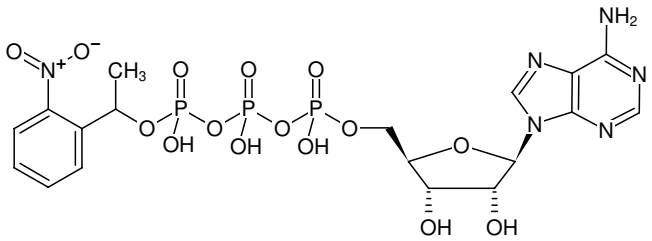
DATA SHEET

Jena Bioscience

NPE-caged-ATP

Adenosine-5'-triphosphate, P^3-(1-(2-nitrophenyl)-ethyl)-ester, Sodium salt

Cat. No.	Amount
NU-301S	150 µl (10 mM)
NU-301L	5 x 150 µl (10 mM)



Structural formula of NPE-caged-ATP

For research use only!

Shipping: shipped on gel packs

Storage Conditions: store at -20 °C

Additional Storage Conditions: store dark

Short term exposure (up to 1 week cumulative) to ambient temperature possible.

Shelf Life: 12 months after date of delivery

Molecular Formula: $C_{18}H_{23}N_6O_{15}P_3$ (free acid)

Molecular Weight: 656.33 g/mol (free acid)

Exact Mass: 656.04 g/mol (free acid)

CAS#: 67030-27-7

Purity: ≥ 95 % (HPLC)

Form: solution in water

Color: colorless to slightly yellow

Concentration: 10 mM - 11 mM

pH: 7.5 ±0.5

Spectroscopic Properties: λ_{max} 260 nm, ε 18.0 L $mmol^{-1}$ cm^{-1} (Tris-HCl pH 7.5)

Applications:
Determination of quantum yield and irradiation conditions[1, 2, 3]

Time resolved solid state NMR[4]

Ligand for purinergic receptors:
The nucleotide can be transported extra- or intracellular in a protected form to the target. After activation by well-defined conditions the liberated ATP can interact with P2X- and P2Y-receptors. Interacting subreceptor types and corresponding references are listed in Data sheet #NU-1010.

Agonistic ligand, mainly for nucleoside receptor A_1
Nucleoside-triphosphates can be converted by different membrane-bound phosphatases into nucleosides acting as nucleoside receptor ligands. The caged form is protected during uptake and transport in animal experiments and can be well-directed released through activation at the target tissue.

Selected References:

[1] Omran *et al.* (2009) Short-length dimethoxynitrophenyl photo-cleavable crosslinkers, synthesis and photolysis. *Journal of Photochemistry and Photobiology A: Chemistry* **208**:125.

[2] Specht *et al.* (2006) New Photoremovable Protecting Groups for Carboxylic Acids with High Photolytic Efficiencies at Near-UV Irradiation. Application to the Photocontrolled Release of l-Glutamate. *ChemBioChem* **7**:1690.

[3] Zscherp *et al.* (2001) Reaction-induced infrared difference spectroscopy for the study of protein reaction mechanisms. *Biochemistry* **40**:1875.

[4] Cherepanov *et al.* (2008) A view on phosphate ester photochemistry by time-resolved solid state NMR. Intramolecular redox reaction of caged ATP. *Physical Chemistry Chemical Physics* **10**:6820.

Volonte *et al.* (2009) Membrane components and purinergic signalling: the purinome, a complex interplay among ligands, degrading enzymes, receptors and transporters. *FEBS J.* **276**:318.

Yegutkin (2008) Nucleotide and nucleoside converting enzymes: Important modulators of purinergic signalling cascade. *Biochim. Biophys. Acta* **1783**:673.

Scheirlinckx *et al.* (2001) Monitoring of secondary and tertiary structure changes in the gastric H+/K+-ATPase by infrared spectroscopy *Eur. J. Biochem.* **268 (13)**:3644.

Barth *et al.* (2000) Substrate binding and enzyme function investigated by infrared spectroscopy. *FEBS Lett.* **477**:151.

Hess (1999) Light-Activated (Caged) Biological Ligands. *Encyclopedia of Molecular Biology*, Vol. 3, T.E. Creighton (Ed.), pp. 1385-1391.

Broustovetsky *et al.* (1997) Biochemical and physical parameters of the electrical currents measured with the ADP/ATP carrier by photolysis of caged ADP and ATP. *Biochemistry* **36**:13865.

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Emoto *et al.* (1995) Tension relaxation induced by pulse photolysis of caged ATP in partially crosslinked fibers from rabbit psoas muscle. *Proc. Natl. Acad. Sci. USA* **92**:1461.

Barth *et al.* (1995) Photochemical Release of ATP from Caged ATP Studied by Time-Resolved Infrared Spectroscopy. *J. Am. Chem. Soc.* **117**:10311.

Hyman *et al.* (1992) Microtubule-motor activity of a yeast centromere-binding protein complex. *Nature* **359**:533.

Fajer *et al.* (1990) Myosin heads have a broad orientational distribution during isometric muscle contraction: time-resolved EPR studies using caged ATP. *Proc. Natl. Acad. Sci. USA* **87**:5538.

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Photolysis. *J. Am. Chem. Soc.* **110**:7170.

Goldman *et al.* (1982) Relaxation of muscle-fibers by photolysis of caged ATP. *Nature* **300**:701.