

Technical Information about P¹- (5'- Adenosyl)-P⁴- (5'- uridyl)- tetraphosphate (Up₄A / Ap₄U)

Update: October 19, 2018 нл

Abbreviation:

Up₄A / Ap₄U

Formula	CAS No.	Molecular Weight	UV	BIOLOG Cat.No.
C ₁₉ H ₂₇ N ₇ O ₂₁ P ₄ (free acid)	[10527-48-7]	813.4 (free acid)	$λ_{\text{max}}$ 260 nm / ε 22700 / pH 7	U 008

Name: P¹- (5'- Adenosyl)- P⁴- (5'- uridyl)- tetraphosphate / Uridine (5')- adenosine (5')- tetraphosphate / Uridine- adenosine-tetraphosphate

Description: Up₄A is a dinucleoside polyphosphate containing both, a purine nucleobase as well as a pyrimidine nucleobase moiety.

Properties: Up₄A is a purinoceptor agonist and endothelium-derived vasoconstrictive factor.

Specification: Lyophilized or crystallized sodium salt. The free acid or other salt forms are available upon request. Equal concentrations of Up₄A can appear very different in volume due to sensitivity of the lyophilized form to humidity. The compound can even contract to small volume droplets. Normally the product is located in the conical bottom of the tube. Micromolar quantities are determined by UV at λ_{max} .

Purity: Typical analysis is better than 95% (HPLC / UV / 260 nm). The product is not sterile and has not been tested for endotoxins.

Solubility: Up_4A is soluble to at least 32 mM in water. Please rinse tube walls carefully and preferably use ultrasonic or vortex to achieve total and uniform mixing. When opening the tube please make sure that no substance is lost within the cap.

Stability and Storage: Up₄A has sufficient stability at room temperature and does not need special care during handling or shipment. Nevertheless, we recommend that the compound should be stored in the freezer, for longer storage periods preferably in freezer-dried form.

Toxicity and Safety: Please keep in mind that the *in vivo* properties of this compound are not sufficiently characterized up to now. Avoid skin contact or ingestion and allow only trained personnel to handle the product.

Our products are designed, developed and sold for research purposes only. They are intended for *in vitro* and nonhuman *in vivo* laboratory applications. Any other use requires approval of health authorities.

Not for drug, household or related uses!

Selected References for Up₄A:

Durnin, L.; Hwang, S.J.; Kurahashi, M.; Drumm, B.T.; Ward, S.M.; Sasse, K.C.; Sanders, K.M.; Mutafova-Yambolieva, V.N., *Proc. Natl. Acad. Sci. USA*, **111**, 15821 - 15826 (2014): "Uridine Adenosine Tetraphosphate is a Novel Neurogenic P2Y1 Receptor Activator in the Gut"

Wiedon, A.; Tölle, M.; Bastine, J.; Schuchardt, M.; Huang, T.; Jankowski, V.; Jankowski, J.; Zidek, W.; van der Giet, M., *Biochem. Biophys. Res. Commun.*, **417**, 1035 - 1040 (2012): "Uridine Adenosine Tetraphosphate (Up₄A) is a Strong Inductor of Smooth Muscle Cell Migration via Activation of the P2Y₂ Receptor and Cross-communication to the PDGF Receptor"

Matsumoto, T.; Tostes, R.C.; Webb, R.C., *Adv. Pharmacol. Sci.*, Article ID 435132 (2011): "The Role of Uridine Adenosine Tetraphosphate in the Vascular System"

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Linder, A.E.; Tumbri, M.; Linder, F.F.P.; Webb, R.C.; Leite, R., *Vasc. Pharmacol.*, **48**, 202 - 207 (2008): "Uridine Adenosine Tetraphosphate Induces Contraction and Relaxation in Rat Aorta"

Jankowski, V.; Patzak, A.; Herget-Rosenthal, S.; Tran, T.N.A.; Lai, E.Y.; Günthner, T.; Buschmann, I.; Zidek, W.; Jankowski, J., J. Mol. Med., 86, 333 - 340 (2008): "Uridine Adenosine Tetraphosphate Acts as an Autocrine Hormone Affecting Glomerular Filtration Rate"

Gui, Y.; Walsh, M.P.; Jankowski, V.; Jankowski, J.; Zheng, X.L., *Am. J. Physiol. Lung Cell. Mol. Physiol.*, **294**, L733 - L738 (2008): "Up₄A Stimulates Endothelium-independent Contraction of Isolated Rat Pulmonary Artery"

Hristovska, A.; Hansen, P.B.; Wolff, H.; Vanhoutte, P.M.; Jensen, B.L.; Bie, P., *Acta Physiol.*, **190**, Supplement 656, P03, (2007): "Dual Effect of Uridine Adenosine Tetraphosphate (Up4A) on Vascular Tone in Mouse Aorta"

Bie, P.; Madsen, O.; Wolff, H., *FASEB J.*, **21**, 597.7 (2006): "Cardiorenal Effects of Infusion of Uridine Adenosine Tetraphosphate (Up4A) to Conscious Rats: Hypertension and Electrolyte Retention"

Jankowski, V.; Meyer, A.-A.; Schlattmann, P.; Gui, Y.; Zheng, X.-I.; Stamcou, I.; Radtke, K.; Tran, T.N.A.; van der Giet, M.; Tölle, M.; Zidek, W.; Jankowski, J., *Arterioscler. Thromb. Vasc. Biol.*, **27**, 1776 - 1781 (2007): "Increased Uridine Adenosine Tetraphosphate Concentrations in Plasma of Juvenile Hypertensives"

Leite, R.; Linder, F.F.P.; Linder, E.; Webb, R.C., FASEB J., 20, A1185 (2006): "Uridine Adenosine Tetraphosphate-induced Contraction is Modulated by the Endothelium and Involves an Increased Superoxide Formation in DOCA-Salt Hypertension"

Jankowski, V.; Tölle, M.; Vanholder, R.; Schönfelder, G.; van der Giet, M.; Henning, L.; Schlüter, H.; Paul, M.; Zidek, W.; Jankowski, J., *Nature Medicine*, **11**, 223 - 227 (2005): "Uridine Adenosine Tetraphosphate: A Novel Endothelium-derived Vasoconstrictive Factor"