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Technical Information about (D)-DT-2

Potent inhibitor of cGMP-dependent protein kinase

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Sequence: y-g-r-k-k-r-r-q-r-r-r-p-p-l-r-k-k-k-k-k-h-amide ((D)-DT-2)

Formula: $C_{122}H_{223}N_{53}O_{23}$ for free peptide

Molecular Weight: 2800.5 for free peptide

CAS No.: [pending]

BIOLOG Cat. No.: D 110

Description: (D)-DT-2 is a peptide-based, membrane-permeant and proteolytically stable inhibitor of cyclic GMP-dependent protein kinase (PKG) Iα and Iβ with nanomolar *in vitro* IC_{50} values (Nickl et al. 2010, Gambaryan et al. 2011). It displays high selectivity for cyclic GMP-dependent protein kinase Iα compared to cyclic AMP-dependent protein kinase with a ratio of approximately 15,000 fold (Nickl et al. 2010).
(D)-DT-2 is the newly developed D-amino acid analogue of the peptidic PKG inhibitor DT-2 (Cat. No. D 051). So far, the inhibitory potential of (D)-DT-2 in *in vivo* applications has not been fully characterized, but seems to be variable depending on the type of biosystem used. It is recommended to control the physiological effects of (D)-DT-2 in *in vivo* applications by PKG specific substrate phosphorylation.
BIOLOG also offers the peptide-based PKG Iα and Iβ inhibitor DT-3 (Cat. No. D 052) as well as the control peptide W45 (Cat. No. W 001).

Specification: Crystallized or lyophilized trifluoroacetate salt. Probably hygroscopic. Equal concentrations of (D)-DT-2 can appear very different in volume.

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

Solubility: (D)-DT-2 is soluble to at least 6 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.

Preparation of Stock Solutions: Addition of 179 µL water or buffer to a 0.5 mg vial yields a 1 mM solution.

Stability and Storage: (D)-DT-2 is chemically rather stable. Nevertheless, we recommend that the compound should be stored in the freezer, for longer storage periods preferably in freeze-dried form.

Toxicity and Safety: Since cyclic GMP has multiple tasks in every organism inhibition of protein kinase G could possibly interfere with many cell regulation processes *in vivo*. However, due to the rather small quantities to work with, no health hazards have been reported. Nevertheless 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!

P.t.o.

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References for (D)-DT-2:

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Gambaryan, S.; Butt, E.; Geiger, J.; Lohmann, S.M.; Walter U., *BMC Pharmacol.*, **11**, Suppl. 1, P27 (2011): "Specific PKG Inhibitors: Do They Really Exist?"

Koika, V.; Zhou, Z.; Vasileidis, I.; Roussos, C.; Finetti, F.; Monti, M.; Morbidelli, L.; Papapetropoulos, A., *Vasc. Pharmacol.*, **53**, 215 - 222 (2010): "PKG-I Inhibition Attenuates Vascular Endothelial Growth Factor-stimulated Angiogenesis"

Nickl, C.K.; Raidas, S.K.; Zhao, H.; Sausbier, M.; Ruth, P.; Tegge, W.; Brayden, J.E.; Dostmann, W.R., *Biochim. Biophys. Acta*, **1804**, 524 - 532 (2010): “(D)-Amino Acid Analogues of DT-2 as Highly Selective and Superior Inhibitors of cGMP-dependent Protein Kinase Iα“

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