PRODUCT INFORMATION

PAMAM Dendrimer G3.5 Carboxylate (sodium salt) (water solution)

Item No. 39108

CAS Registry No.: 192948-77-9
Synonyms: PAMAM G3.5 Carboxylate,
Polyamidoamine Dendrimer G3.5 Carboxylate
MF: $[NH_2(CH_2)_2NH_2]$:(G=3.5);dendri $PAMAM(NHCH_2CH_2COONa)_{64}$
FW: 12,927.7
Supplied as: A solution in water
Storage: -20°C
Stability: ≥2 years

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

Description

PAMAM dendrimer G3.5 carboxylate (PAMAM G3.5) is a polyamidoamine (PAMAM) dendrimer with carboxylate termini that has been used as a drug delivery system *in vitro* and *in vivo*.[1,2] It is approximately 66.1 Å in diameter in water and has 48 surface groups.[3] PAMAM G3.5 is active against *E. coli* (IC_{50} = 22 mg/ml) and increases the mitochondrial membrane potential of isolated rat liver mitochondria when used at concentrations ranging from 10 to 50 µM.[4,5] Unlike amine-terminated PAMAM G4.0, PAMAM G3.5 (20 µM) is not toxic to zebrafish embryos.[6] A fluorescently labeled form of PAMAM G3.5 enters Caco-2 cells *via* dynamin-, clathrin-, and caveolin-mediated endocytosis.[7] Conjugates of PAMAM G3.5 with the active fragment of the DNA cross-linking agent oxaliplatin (Item No. 13106) are cytotoxic to A2780 ovarian, MCF-7 breast, and Caco-2 colon cancer cells and BJ fibroblasts (IC_{50}s = 0.08, 4.1, 0.39, and 3 µM, respectively).[1] PAMAM G3.5 in complex with the topoisomerase I inhibitor camptothecin (Item No. 11694) increases the oral bioavailability of camptothecin in mice.[2]

References

1. Camacho, C., Tomás, H., and Rodrigues, J. Use of half-generation pamam dendrimers (G0.5-G3.5) with carboxylate end-groups to improve the $DACHPtCl_2$ and 5-FU efficacy as anticancer drugs. *Molecules* **26(10)**, 2924 (2021).
2. Sadekar, S., Thiagarajan, G., Bartlett, K., *et al*. Poly(amido amine) dendrimers as absorption enhancers for oral delivery of camptothecin. *Int. J. Pharm.* **456(1)**, 175-185 (2013).
3. Caminati, G., Turro, N.J., and Tomalia, D.A. Photophysical investigation of starburst dendrimers and their interactions with anionic and cationic surfactants. *J. AM. Chem. Soc.* **112(23)**, 8515-8522 (1990).
4. Wang, B., Navath, R.S., Menjoge, A.R., *et al*. Inhibition of bacterial growth and intramniotic infection in a guinea pig model of chorioamnionitis using PAMAM dendrimers. *Int. J. Pharm.* **395(1-2)**, 298-308 (2010).
5. Labieniec, M. and Gabryelak, T. Preliminary biological evaluation of poli(amidoamine) (PAMAM) dendrimer G3.5 on selected parameters of rat liver mitochondria. *Mitochondrion* **8(4)**, 305-312 (2008).
6. Heiden, T.C., Dengler, E., Kao, W.J., *et al*. Developmental toxicity of low generation PAMAM dendrimers in zebrafish. *Toxicol. Appl. Pharmacol.* **225(1)**, 70-79 (2007).
7. Goldberg, D.S., Ghandehari, H., and Swaan, P.W. Cellular entry of G3.5 poly (amido amine) dendrimers by clathrin- and dynamin-dependent endocytosis promotes tight junctional opening in intestinal epithelia. *Pharm. Res.* **27(8)**, 1547-1557 (2010).

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent *via* email to your institution.

WARRANTY AND LIMITATION OF REMEDY
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