PRODUCT INFORMATION

PAMAM Dendrimer G4.5 Carboxylate (sodium salt) (water solution)

Item No. 39109

CAS Registry No.: 202009-66-3
Synonyms: PAMAM G4.5 Carboxylate, Polyamidoamine Dendrimer G4.5 Carboxylate
MF: $[NH_2(CH_2)_2NH_2]$:(G=4.5);dendri PAMAM$(NHCH_2CH_2COONa)_{128}$ $[NH_2(CH_2)_2NH_2]$:(G=4.5);dendri PAMAM$(NHCH_2CH_2COONa)_{128}$
FW: 26,251.9
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 G4.5 carboxylate (PAMAM G4.5 carboxylate) is a polyamidoamine (PAMAM) dendrimer with carboxylate termini that has been used as a drug delivery system.[1] It is approximately 87.9 Å in diameter in water and has 96 surface groups.[2] Unlike the amine-terminated PAMAM G5.0 (Item No. 39075), it does not rupture bilayer lipid membranes when used at a concentration of 50 µM.[3] PAMAM G4.5 carboxylate disulfur-linked aggregates (10 µg/ml) encapsulating the phenol ferulic acid (Item No. 19871) and the mitotic inhibitor paclitaxel (Item No. 10461) induce apoptosis and decrease the mitochondrial membrane potential in multidrug-resistant KB-8-5 epidermal carcinoma cells.[1] Complexes of PAMAM G4.5 carboxylate with the active component of cisplatin are cytotoxic to A2780 ovarian cancer cells (IC_{50} = 620 nM).[4] A fluorescently labeled form of PAMAM G4.5 carboxylate selectively accumulates in tumors and kidneys over liver, spleen, heart, and lungs in a 4T1 murine mammary carcinoma model.[5]

References

1. Anbazhagan, R., Muthusamy, G., Krishnamoorthi, R., *et al.* PAMAM G4.5 dendrimers for targeted delivery of ferulic acid and paclitaxel to overcome P-glycoprotein-mediated multidrug resistance. *Biotechnol. Bioeng.* **118(3),** 1213-1223 (2021).
2. 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).
3. Shcharbin, D., Drapeza, A., Loban, V., *et al.* The breakdown of bilayer lipid membranes by dendrimers. *Cell. Mol. Biol. Lett.* **11(2),** 242-248 (2006).
4. Kirkpatrick, G.J., Plumb, J.A., Sutcliffe, O.B., *et al.* Evaluation of anionic half generation 3.5-6.5 poly(amidoamine) dendrimers as delivery vehicles for the active component of the anticancer drug cisplatin. *J. Inorg. Biochem.* **105(9),** 1115-1122 (2011).
5. Oddone, N., Lecot, N., Fernández, M., *et al. In vitro* and *in vivo* uptake studies of PAMAM G4.5 dendrimers in breast cancer. *J. Nanobiotechnology* **14(1),** 45 (2016).

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