Polyoxyethylene stearate

Cat. No.: HY-101530

CAS No.: 9004-99-3

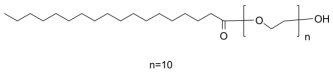
Molecular Formula: $C_{20}H_{40}O_3$ (monomer)

Target: P-glycoprotein; Bacterial

Pathway: Membrane Transporter/Ion Channel; Anti-infection

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro	DMSO : 100 mg/mL (Need ultrasonic)
In Vivo	1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline Solubility: ≥ 2.5 mg/mL (Infinity mM); Clear solution 2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) Solubility: 2.5 mg/mL (Infinity mM); Suspended solution; Need ultrasonic 3. Add each solvent one by one: 10% DMSO >> 90% corn oil Solubility: ≥ 2.5 mg/mL (Infinity mM); Clear solution

BIOLOGICAL ACTIVITY

Description	Polyoxyethylene stearate (POES) is a non-ionic emulsifying agent.
In Vitro	Polyoxyethylene stearate has been recommended as an additive to the radiolabelled 7H12 Middlebrook TB media and as such has been shown to enhance growth of mycobacteria in the radiometric BACTEC rapid culture system. Polyoxyethylene (50) stearate produces the greatest enhancement in growth and reduction in the time taken to detect growth for M. tuberculosis and polyoxyethylene (30) stearate and polyoxyethylene (JL) stearate for species of mycobacteria other than M. tuberculosis[1]. Polyoxyethylene stearate inhibits P-gp mediated efflux in a concentration dependent manner mainly by modulating substrate-stimulated P-gp ATPase activity[2]. Polyoxyethylene 40 stearate reduces vinblastine sulfate efflux. The cytotoxicity of vinblastine to K562/ADR cells is significantly enhanced when the cells are cotreated with 100 or 150 μg/mL polyoxyethylene 40 stearate[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Polyoxyethylene stearate is potentially useful as a pharmaceutical ingredient to improve the oral bioavailability of coadministered P-gp substrates and substrates for certain CYP isoforms[2]. The average tumor volume and average tumor weight are significantly less in the polyoxyethylene 40 stearate+vinblastine group. The inhibition rate for tumor growth is increased from 0.06 (vinblastine group) to 0.84 (vinblastine+polyoxyethylene 40 stearate group)[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [3]	Polyoxyethylene 40 stearate is added to the test vinblastine solution. The cytotoxicity of vinblastine to K562/ADR cells is then assessed. The final concentrations of polyoxyethylene 40 stearate are 0, 50, 100, and 150 μg/mL. After 8 hours of treatment, cells are incubated for 4 hours in the presence of MTT reagent and then lysed with DMSO. Absorbance is measured at 490 nM[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [3]	Mice: Polyoxyethylene 40 stearate and vinblastine are dissolved in 0.9% sodium chloride solution, yielding a solution of 200 μg/mL VBL and 150 μg/mL PS40. The drug is injected subcutaneously in a volume of 0.1 mL per 10 g of body weight at a dosage of 2 mg/kg vinblastine and 1.5 mg/kg polyoxyethylene 40 stearate around the tumor every other day for 8 days. The volume of tumors and the weight of mice are measured every day from the day the tumors are formed[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Cutler RR, et al. The effect of polyoxyethylene stearate (POES) on the growth of mycobacteria in radiometric 7H12 Middlebrook TB medium. Tubercle. 1987 Sep;68(3):209-20.

[2]. Zhu S, et al. Effects of polyoxyethylene (40) stearate on the activity of P-glycoprotein and cytochrome P450. Eur J Pharm Sci. 2009 Jul 12;37(5):573-80.

[3]. Luo L, et al. Polyoxyethylene 40 stearate modulates multidrug resistance and enhances antitumor activity of vinblastine sulfate. AAPS J. 2007 Oct 5;9(3):E329-35.

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