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**Product Data Sheet**

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Product Name: Polyoxyethylene stearate (POES)

Cat. No.: GC33151

**Chemical Properties**

Cas. No. 9004-99-3

SMILES O=C(OCCO)CCCCCCCCCCCCCCCCC.[n].[n].[=].[10]Formula  $C_{20}H_{40}O_3$  M.Wt 328.53Solubility DMSO :  $\geq 49$  mg/mL (149.15 mM) Storage Store at  $-20^{\circ}C$ 

General tips For obtaining a higher solubility , please warm the tube at  $37^{\circ}C$  and shake it in the ultrasonic bath for a while. Stock solution can be stored below  $-20^{\circ}C$  for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.

Structure **Protocol****Cell experiment:**

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  $\mu\text{g/mL}$ . 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].

**Caution: Product has not been fully validated for medical applications. For research use only.**

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**Animal experiment:**

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].

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### 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. Poxoxyethylene 40 stearate modulates multidrug resistance and enhances antitumor activity of vinblastine sulfate. *AAPS J*. 2007 Oct 5;9(3):E329-35.

### Background

Polyoxyethylene stearate (POES) is a non-ionic emulsifying agent.

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

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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].

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].

[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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