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产品名称: **Daun02**  
产品别名: **Daun02**

生物活性:					
Description		Daun02 is a prodrug of the topoisomerase inhibitor Daunorubicin.			
IC <sub>50</sub> & Target		Topoisomerase	Daunorubicins/Doxorubicins		
In Vitro		Daun02 is a prodrug, which is converted by β-galactosidase to Daunorubicin, which has been shown to reduce calcium ion (Ca <sup>2+</sup> )-dependent action potentials in neuroblastoma cells[1]. Daunorubicin is a topoisomerase inhibitor[2]. Daun02 is a good substrate for β-galactosidase (β-gal). The concentration of Daun02 producing 50% (EC <sub>50</sub> ) decrease in cell viability is 0.5 μM, 1.5 μM, and 3.5 μM for T47-D, Panc02 and MCF-7, respectively[3].			
In Vivo		Daun02 is a good substrate for β-gal with K <sub>m</sub> and V <sub>max</sub> values of 0.37 mM and 8.6 μmol/min/mg protein. At a concentration of 10 <sup>-5</sup> M, Daun02 is 79% bound to plasma protein compares to 94% for Daunomycin[3].			
Solvent&Solubility	<b>In Vitro:</b> <b>DMSO : ≥ 100 mg/mL (113.02 mM)</b>  * "≥" means soluble, but saturation unknown.				
	Preparing Stock Solutions	<div>Solvent / Mass / Concentration</div>	1 mg	5 mg	10 mg
		1 mM	1.1302 mL	5.6511 mL	11.3021 mL
		5 mM	0.2260 mL	1.1302 mL	2.2604 mL
		10 mM	0.1130 mL	0.5651 mL	1.1302 mL
	*请根据产品在不同溶剂中的溶解度选择合适的溶剂配制储备液；一旦配成溶液，请分装保存，避免反复冻融造成的产品失效。  储备液的保存方式和期限：-80℃, 6 months; -20℃, 1 month。 -80℃ 储存时，请在 6 个月内使用，-20℃ 储存时，请在 1 个月内使用。  <b>In Vivo:</b>  请根据您的实验动物和给药方式选择适当的溶解方案。以下溶解方案都请先按照 In Vitro 方式配制澄清的储备液，再依次添加助溶剂：  ——为保证实验结果的可靠性，澄清的储备液可以根据储存条件，适当保存；体内实验的工作液，建议您现用现配，当天使用； 以下溶剂前显示的百分比是指该溶剂在您配制终溶液中的体积占比；如在配制过程中出现沉淀、析出现象，可以通过加热和/或超声的方式助溶  1.请依序添加每种溶剂： 10% DMSO→40% PEG300 →5% Tween-80 → 45% saline  Solubility: ≥ 2.5 mg/mL (2.83 mM); Clear solution  此方案可获得 ≥ 2.5 mg/mL (2.83 mM, 饱和度未知) 的澄清溶液。  以 1 mL 工作液为例，取 100 μL 25.0 mg/mL 的澄清 DMSO 储备液加到 400 μL PEG300 中，混合均匀；向上述体系中加入 50 μL Tween-80，混合均匀；然后继续加入 450 μL 生理盐水定容至 1 mL。				
	[1]. Koya E, et al. Targeted disruption of cocaine-activated nucleus accumbens neurons prevents context-specific sensitization. Nat Neurosci. 2009 Aug;12(8):1069-73.				
	[2]. Lehmann M, et al. Activity of topoisomerase inhibitors daunorubicin, idarubicin, and aclarubicin in the Drosophila Somatic Mutation and Recombination Test. Environ Mol Mutagen. 2004;43(4):250-7.				
	References				



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	<p>[3]. Farquhar D, et al. Suicide gene therapy using E. coli beta-galactosidase. Cancer Chemother Pharmacol. Cancer Chemother Pharmacol. 2002 Jul;50(1):65-70.</p>
<b>实验参考:</b>	
<b>Cell Assay</b>	<p>Murine Panc02 cells are maintained as exponentially growing monolayer cultures in DMEM/F12 or RPMI-1640 medium supplemented with 10% FBS, 1% glutamine, penicillin, and streptomycin at 37°C. For cytotoxicity assay, the cells are seeded into 96-well microplates and incubated overnight. Initial experiments indicate that FBS contains low levels of intrinsic <math>\beta</math>-gal activity as evidenced by the slow conversion of Daun02 to Daunomycin; however, this is not evident for human serum. Therefore, prior to addition of Daun02, the FBS concentration is reduced from 10% to 1% for Panc02 cells. Human serum (10%) is used for the transduced human cell lines. The cells are incubated for 24 h and then MTT is added. Lysis buffer (20% SDS dissolved in 50% DMF) is added 4 h after the addition of MTT and the cells are incubated overnight. The optical density at 570 nm is determined using a BIO-RAD microplate reader. Cytotoxicity is expressed as the concentration of drug or prodrug that produced a 50% (EC50) reduction in cell viability[3].</p>
<b>Animal Administration</b>	<p>Mice[3] Male athymic BALB/c mice (nu/nu genotype, 18-20 g) are used. Daunomycin is administered at a dose of 20 mg/kg in 100 <math>\mu</math>L normal saline solution into the tail vein. Daun02 is administered intraperitoneally at a dose of 200 mg/kg in 200 <math>\mu</math>L vehicle. (This route is selected because the volume of drug solution, 200 <math>\mu</math>L, is too great for tail vein administration.) Tumor volume is determined by caliper measurement in two dimensions and converted to tumor mass. Tumor growth is monitored over a period of 30 days or until the tumors have reached a mass of 5% of bodyweight (about 1 g). The animals are then killed by carbon dioxide asphyxiation.</p>
<b>References</b>	<p>[1]. Koya E, et al. Targeted disruption of cocaine-activated nucleus accumbens neurons prevents context-specific sensitization. Nat Neurosci. 2009 Aug;12(8):1069-73. [2]. Lehmann M, et al. Activity of topoisomerase inhibitors daunorubicin, idarubicin, and aclarubicin in the Drosophila Somatic Mutation and Recombination Test. Environ Mol Mutagen. 2004;43(4):250-7. [3]. Farquhar D, et al. Suicide gene therapy using E. coli beta-galactosidase. Cancer Chemother Pharmacol. Cancer Chemother Pharmacol. 2002 Jul;50(1):65-70.</p>