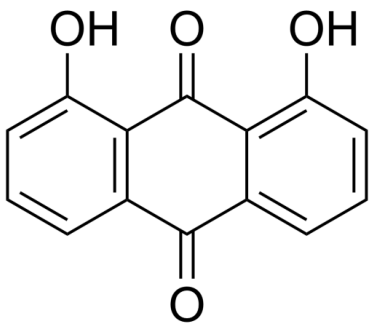
Data Sheet

Product Name:	Danthron
Cat. No.:	CS-4392
CAS No.:	117-10-2
Molecular Formula:	$C_{14}H_8O_4$
Molecular Weight:	240.21
Target:	AMPK; Autophagy; Bacterial; Virus Protease
Pathway:	Anti-infection; Autophagy; Epigenetics; PI3K/Akt/mTOR
Solubility:	DMSO : 5 mg/mL (20.82 mM; ultrasonic and warming and heat to 60°C)



BIOLOGICAL ACTIVITY:

Danthron is a natural product extracted from the traditional Chinese medicine Salvia miltiorrhiza Bunge. Danthron functions in regulating glucose and lipid metabolism by activating **AMPK**. IC50 & Target:AMPK[1] **In Vitro:** Danthron (0.1, 1, and 10 μM) dose-dependently promotes the phosphorylation of AMPK and acetyl-CoA carboxylase (ACC) in both HepG2 and C2C12 cells. Meanwhile, Danthron treatment significantly reduces the lipid synthesis related sterol regulatory element-binding protein 1c (SREBP1c) and fatty acid synthetase (FAS) gene expressions, and the total cholesterol (TC) and triglyceride (TG) levels. In addition, Danthron treatment efficiently increases glucose consumption. Danthron effectively reduces intracellular lipid contents and enhances glucose consumption in vitro via activation of AMPK signaling pathway. 10 μM Danthron/24 h is safe for HepG2 cells. With 80% confluence, HepG2 cells are incubated with Danthron (0.1-10 μM) in FBS-Free media for 8 h. Subsequently, cells are harvested for Western blot assay. Danthron increases the p-AMPK protein in a dose-dependent manner, and no changes in t-AMPK protein are observed[1]. Danthron inhibits 9-cis retinoic acid (9cRA)-induced retinoic X receptor α (RXRα) transactivation by IC_{50} at 0.11 μM. To further clarify the stoichimetric ratio of Danthron binding to RXRα-ligand-binding domain (LBD), isothermal titration calorimetry (ITC) experiment is performed. The K_D value of Danthron binds to RXRα-LBD by ITC experiment is determined at 7.5 μM[2]. **In Vivo:** Danthron functions as an insulin sensitizer in vivo. Danthron improves insulin sensitivity in diet-induced obese (DIO) mice. The insulin tolerance test result shows that Danthron (5 mg/kg) treated diet-induced obesity mice exhibit lower glucose levels after insulin challenge, compared with the control vehicle-treated group[2].

PROTOCOL (Extracted from published papers and Only for reference)

Cell Assay: [1]HepG2 cells are transfected with pGL3-ABCA1 promoter-luc or pGL3-ABCG1 promoter-luc and pRL-SV40 plasmids. At 6 h post-transfection, the cells are incubated with **Danthron (0-20 μM)**, TO90 (2 μM) or DMSO for 24 h. Luciferase activity is measured using the Dual Luciferase Reporter Assay kit[1].

Animal Administration: [2]Mice[2]

C57/BL6 male mice are fed with a high fat diet for 3 months and treated with **Danthron (5 mg/kg)** or vehicle **orally** for **8 weeks**. The animals are then fasted for 6 h and then given intraperitoneal injection of insulin at 1.5 units/kg. Blood samples are analyzed at 15, 30, 45, 60, 90, and 120 min using Accu-Chek active blood sugar test meter.

References:

[1]. Zhou R, et al. Danthron activates AMP-activated protein kinase and regulates lipid and glucose metabolism in vitro. Acta Pharmacol Sin. 2013

Aug;34(8):1061-9.

[2]. Zhang H, et al. Danthron functions as a retinoic X receptor antagonist by stabilizing tetramers of the receptor. J Biol Chem. 2011 Jan 21;286(3):1868-75.

CAIndexNames:

9,10-Anthracenedione, 1,8-dihydroxy-

SMILES:

O=C1C2=C(C=CC=C2O)C(C3=CC=CC(O)=C13)=O

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