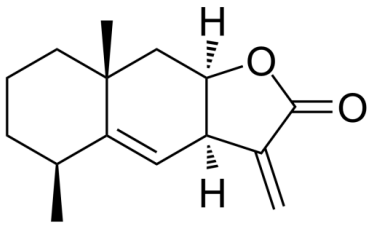
Data Sheet

Product Name:	Alantolactone
Cat. No.:	CS-3595
CAS No.:	546-43-0
Molecular Formula:	C15H20O2
Molecular Weight:	232.32
Target:	STAT
Pathway:	JAK/STAT Signaling; Stem Cell/Wnt
Solubility:	DMSO : ≥ 100 mg/mL (430.44 mM)



BIOLOGICAL ACTIVITY:

Alantolactone is a selective **STAT3** inhibitor, with potent anticancer activity. **In Vitro:** Alantolactone induces apoptosis in HepG2 cells in a dose-dependent manner. This Alantolactone-induced apoptosis is found to be associated with GSH depletion, inhibition of STAT3 activation, ROS generation, mitochondrial transmembrane potential dissipation, and increased Bax/Bcl-2 ratio and caspase-3 activation[1]. Alantolactone decreases STAT3 translocation to the nucleus, its DNA-binding, and STAT3 target gene expression. Alantolactone significantly inhibits STAT3 activation with a marginal effect on MAPKs and on NF-κB transcription; however, this effect is not mediated by inhibiting STAT3 upstream kinases[2]. **In Vivo:** It is found that the average tumor volume in the Alantolactone-treated mice is approximately 2.17-fold lower compared with that in the control mice. However the administration of Alantolactone does not affect the overall bodyweight during the experimental period, suggesting no apparent toxicity. Additionally, the average tumor weight is significantly lower in the Alantolactone-treated mice compared with the control mice. What's more, the administration of Alantolactone results in a significant decrease in p-STAT3 and cyclin D1 expression in the tumor tissues[2].

PROTOCOL (Extracted from published papers and Only for reference)

Cell Assay: Cells are cultured for 24 h before drug treatment in 96 well plates. Cells were treated with **Alantolactone (0, 10, 20, 30, 40, 50, and 60 μM)** for 12 h and cell viability is measured by MTT assay[1]. **Animal Administration:** [2]Mice[2]
Female athymic BALB/c nude mice at the age of 6 weeks are used. MDA-MB-231 cells (5×10^6 cells/200 μL) are subcutaneously injected into the right flanks of the mice. Ten days after the injection of cells, mice are randomly divided into treatment and control groups (n=5). The animals are administered **Alantolactone** (**2.5 mg/kg** of body weight, suspended in DMSO 0.1% v/v, 100 μL i.p. injection) every 2 days, whereas control animals are treated with an equal volume of saline[2].

References:

[1]. Khan M, et al. Alantolactone induces apoptosis in HepG2 cells through GSH depletion, inhibition of STAT3 activation, and mitochondrial dysfunction. Biomed Res Int. 2013;2013:719858.

[2]. Chun J, et al. Alantolactone selectively suppresses STAT3 activation and exhibits potent anticancer activity in MDA-MB-231 cells. Cancer Lett. 2015 Feb 1;357(1):393-403.

CAIndexNames:

Naphtho[2,3-b]furan-2(3H)-one, 3a,5,6,7,8,8a,9,9a-octahydro-5,8a-dimethyl-3-methylene-, (3aR,5S,8aR,9aR)-

SMILES:

O=C(O[C@@]1([H])[C@]2([H])C=C3[C@@H](C)CCC[C@]3(C)C1)C2=C

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

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