Data Sheet (Cat.No.T4S1906)

TargetMol
A DRUG SCREENING EXPERT

Coniferyl alcohol

Chemical Properties

CAS No.:	32811-40-8
Formula:	C10H12O3
Molecular Weight:	180.2
Appearance:	N/A
Storage:	0-4℃ for short term (days to weeks), or -20℃ for long term (months).

Biological Description

Description	Coniferyl alcohol restores the growth of KI-treated BY-2 cells and N. benthamiana seedlings, at high concentrations is toxic to plant cells.
Targets(IC_{50})	Others: None
In vitro	Externally added Coniferyl alcohol at high concentrations reduces the growth of Nicotiana cells and seedlings. Coniferyl alcohol is metabolized by BY-2 cells to several compounds. Coniferyl alcohol (CA) is a common monolignol and a building block of lignin. The toxicity of monolignol alcohols has been stated in the literature, but there are only few studies suggesting that this is true. METHODS AND RESULTS:We investigated the physiological effects of Coniferyl alcohol on living plant cells in more detail. Tobacco (Nicotiana tabacum) Bright yellow-2 cells (BY-2) and Nicotiana benthamiana seedlings both showed concentration-dependent growth retardation in response to 0.5-5 mM Coniferyl alcohol treatment. In some cases, Coniferyl alcohol addition caused cell death in BY-2 cultures, but this response was dependent on the growth stage of the cells. Based on LC-MS/MS analysis, BY-2 cells did not accumulate the externally supplemented Coniferyl alcohol, but metabolized it to ferulic acid, ferulic acid glycoside, coniferin, and to some other phenolic compounds. In addition to growth inhibition, Coniferyl alcohol caused the formation of a lignin-like compound detected by phloroglucinol staining in N. benthamiana roots and occasionally in BY-2 cells. To prevent this, we added potassium iodide (KI, at 5 mM) to overcome the peroxidase-mediated Coniferyl alcohol polymerization to lignin. KI had, however, toxic effects on its own: in N. benthamiana seedlings, it caused reduction in growth; in BY-2 cells, reduction in growth and cell viability. Surprisingly, Coniferyl alcohol restored the growth of KI-treated BY-2 cells and N. benthamiana seedlings.CONCLUSIONS: Our results suggest that Coniferyl alcohol at high concentrations is toxic to plant cells.

Solubility Information

Solubility	< 1 mg/ml refers to the product slightly soluble or insoluble

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	5.549 mL	27.747 mL	55.494 mL
5 mM	1.110 mL	5.549 mL	11.099 mL
10 mM	0.555 mL	2.775 mL	5.549 mL
50 mM	0.111 mL	0.555 mL	1.110 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. The storage conditions and period of the stock solution: - 80 ℃ for 6 months; - 20 ℃ for 1 month. Please use it as soon as possible.

Reference

1. Coniferyl alcohol hinders the growth of tobacco BY-2 cells and Nicotiana benthamiana seedlings. Planta. 2015 Jun 25.

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