Abscisic acid

Cat. No.: HY-100560

CAS No.: 21293-29-8

Molecular Formula: $C_{15}H_{20}O_4$

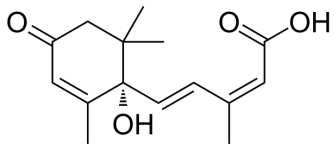
Molecular Weight: 264.32

Target: Endogenous Metabolite; Proton Pump

Pathway: Metabolic Enzyme/Protease; Membrane Transporter/Ion Channel

Storage:

Powder	-20°C	3 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (378.33 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	3.7833 mL	18.9165 mL	37.8329 mL
	5 mM	0.7567 mL	3.7833 mL	7.5666 mL
	10 mM	0.3783 mL	1.8916 mL	3.7833 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 6.25 mg/mL (23.65 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 6.25 mg/mL (23.65 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 6.25 mg/mL (23.65 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Abscisic acid ((S)-(+)-Abscisic acid), an orally active phytohormone in fruits and vegetables, is an endogenously produced mammalian hormone. Abscisic acid is a growth inhibitor and can regulate many aspects of plant growth and development. Abscisic acid inhibits proton pump (H^+-ATPase) and leads to the plasma membrane depolarization in a Ca^{2+}-dependent manner. Abscisic acid, a LANCL2 natural ligand, is a potent insulin-sensitizing compound and has the potential for pre-diabetes, type 2 diabetes and metabolic syndrome[1][2].

IC_{50} & Target	Microbial Metabolite	Human Endogenous Metabolite

In Vitro	In Arabidopsis cell cultures, Abscisic acid ((S)-(+)-Abscisic acid; 10 μM) simultaneously induces rapid alkalinization of the medium and plasma membrane depolarization[1]. Abscisic acid (10 μM) increases Ca^{2+} in cytosol of Arabidopsis cell suspension. Abscisic acid does not inhibit proton pumping directly but through an increase in cytosolic Ca^{2+}[1]. Lanthionine synthetase C-like 2 (LANCL2) is the natural receptor for Abscisic acid. Abscisic acid, both at the organism levels and in specific muscle cells ex vivo, increases both glucose and fatty acid metabolism in the mitochondria, increases glycogen synthesis, activates PI3K independently of insulin and promotes GLUT4 translocation to the cell membrane[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Abscisic acid (orally; 0.125 μg/kg/day; for 12 weeks) improves glycemic control[2]. Abscisic acid (orally; 0.125 μg/kg/day; for 12 weeks) results in significantly lower levels of TNF, MCP-1 and IL-6 in the DIO model. Abscisic acid increases metabolic activity in skeletal muscle[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Diet-induced obesity (DIO) mice at 4 weeks of age[2]
Dosage:	0.125 μg/kg
Administration:	Orally; daily; for 12 weeks
Result:	Improved glycemic control in a diet-induced model of obesity

REFERENCES

[1]. Mathias Brault, et al. Plasma membrane depolarization induced by abscisic acid in Arabidopsis suspension cells involves reduction of proton pumping in addition to anion channel activation, which are both Ca^{2+} dependent. Plant Physiol. 2004 May;135(1):231-43.

[2]. Andrew Leber, et al. Abscisic acid enriched fig extract promotes insulin sensitivity by decreasing systemic inflammation and activating LANCL2 in skeletal muscle. Sci Rep. 2020 Jun 26;10(1):10463.

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