

Product Data Sheet

Product Name: Karrikinolide

Cat. No.: GC47525

Chemical Properties

Cas. No. 857054-02-5

SMILES O=C1C(C)=C2C=COC=C2O1

Formula C₈H₆O₃

M.Wt 150.1

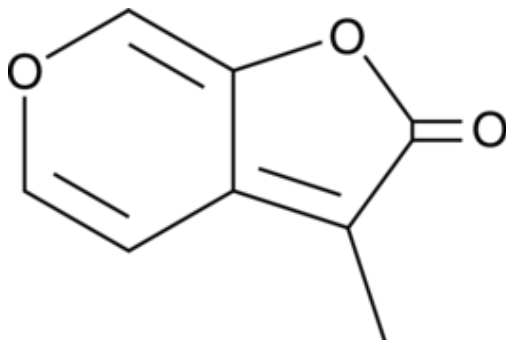
Solubility Chloroform: slightly soluble, Methanol: slightly soluble

Storage Store at -20°C, protect from light

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

This experiment comes from the literature, please modify it according to your specific needs.

1. Intact florets and cleaned seeds were incubated at temperatures between 10 and 40°C, in alternating light or constant darkness, and in the presence or absence of the smoke-derived germination stimulant karrikinolide.
2. Prior to germination testing, florets and cleaned seeds used in the experiments were surface sterilized in 2% (w/v) calcium hypochlorite solution for 30 min, in alternating vacuum cycles for 10 min (e.g, on/off/on at -70 kPa), and then rinsed with sterile deionized water.
3. After sterilization, four replicates of 25 florets or cleaned seeds were plated on 90 mm Petri dishes containing 0.7 % (w/v) water–agar that was prepared with or without karrikinolide at a 0.67 µM

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

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concentration.

4. The dishes were transferred to individual incubators, randomly arranged, set to alternating 12 h light/dark conditions and a constant temperature of 10, 15, 20, 25, 30, 35 or 40 °C. To exclude light during the constant dark treatment, the dishes were wrapped in aluminum foil until the end of the experiment. The light in the incubator was cool white fluorescent light ($45 \mu\text{mol m}^{-2} \text{s}^{-1}$).

5. Germination was tested within 28 days and was defined as germination when the radicle was larger than one third of the floret or seed coat length.

References:

[1] Wolfgang Lewandrowski, Todd E Erickson, Emma L Dalziel, Jason C Stevens, Ecological niche and bet-hedging strategies for *Triodia* (R.Br.) seed germination, *Annals of Botany*, Volume 121, Issue 2, 23 January 2018, Pages 367–375.

Background

Karrikinolide is a compound extracted from charred plant material and its smoke that breaks seed dormancy, stimulates germination and promotes seedling vigor, with applications in horticulture, ecological restoration, and agriculture^[1-3]. Karrikinolide is highly active in promoting seed germination at low concentrations. Karrikinolide (1 nM) reduced the expression levels of genes related to abscisic acid biosynthesis and signal transduction by regulating the relative expression of gibberellin biosynthesis genes, thereby improving the seed germination rate under salt stress. Under salt stress, exogenous addition of Karrikinolide significantly induced antioxidant activity, reduced endogenous hydrogen peroxide (H_2O_2) and malondialdehyde (MDA) levels, and reduced electrolyte leakage. Karrikinolide maintained K^+/Na^+ homeostasis and enhanced the tolerance of wheat seedlings to salinity and alkali stress^[3].

References:

[1] Burger B V, Pošta M, Light M E, et al. More butenolides from plant-derived smoke with germination inhibitory activity against karrikinolide[J]. *South African Journal of Botany*, 2018, 115: 256-263.

[2] Aremu AO, et al. Cytokinin profiles in ex vitro acclimatized *Eucomis autumnalis* plants pre-treated with smoke-derived karrikinolide. *Plant Cell Rep.* 2016 Jan;35(1):227-38.

[3] Shah F A, Ni J, Tang C, et al. Karrikinolide alleviates salt stress in wheat by regulating the redox and K^+/Na^+ homeostasis[J]. *Plant Physiology and Biochemistry*, 2021, 167: 921-933.

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