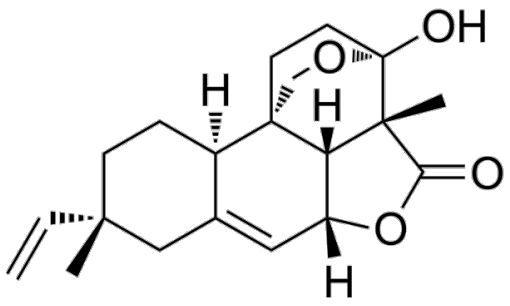
Product Data Sheet

Product Name: Momilactone B
Cat. No.: GC81597

Chemical Properties

Cas. No.	51415-08-8		
Formula	$C_{20}H_{26}O_4$	M.Wt	330.42
Solubility		Storage	Store at 4°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			



Background

Momilactone B is an inhibitor of α-amylase and α-glucosidase, with an IC_{50} of 146.85 μg/mL against Aspergillus oryzae α-amylase and an IC_{50} of 612.03 μg/mL against Saccharomyces cerevisiae α-glucosidase. Momilactone B upregulates the expression of p21 Waf1/Cip1, reduces the kinase activity of Cdk4 and Cdk6, induces cell cycle arrest and apoptosis in cancer cells, and triggers irreversible cell death via cell membrane damage. Momilactone B inhibits the growth of neighboring plant species and serves as a major contributing factor to the allelopathy of rice. Momilactone B can be used in studies related to rice allelopathy, type 2 diabetes, colon cancer and leukemia [1] [2] [3]

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[4].

In Vitro, Momilactone B potently inhibits α-amylase from Aspergillus oryzae, with an IC_{50} of 146.85 μg/mL, and its inhibitory effect is positively correlated with concentration; it also potently inhibits α-glucosidase from Saccharomyces cerevisiae, with an IC_{50} of 612.03 μg/mL[1]. Momilactone B (0.5-10 μM; 24 h) reduces the viability of human colon cancer HT-29 and SW620 cells in a dose-dependent manner[2]. Momilactone B (0.5-5 μM; 72 h) induces dose-dependent cell membrane damage and irreversible cell death in human colon cancer HT-29 and SW620 cells[2]. Momilactone B (0.5-5 μM; 18 h) inhibits colony formation in human colon cancer HT-29 and SW620 cells[2]. Momilactone B (0.25-2 μg/mL; 48 h) reduces the viability of human monocytic leukemia U937 cells in a concentration-dependent manner[4]. Momilactone B potently inhibits root and shoot growth of barnyard grass, with IC_{50} values of 6.1 μM and 6.3 μM, respectively; moreover, at concentrations that produce phytotoxicity against barnyard grass, its growth inhibitory effect on rice seedlings is negligible[3]. Momilactone B potently inhibits root and shoot growth of E. colonum, with IC_{50} values of 5.0 μM and 12.5 μM, respectively[3]. Momilactone B (0.66-3.84 μM; 4 days) is secreted by rice seedlings, and its contribution rate to the growth inhibition of barnyard grass reaches 58.8%-81.9%. Moreover, a significant correlation exists between the concentration of Momilactone B and allelopathic activity among different rice varieties[3]. Momilactone B (0.25-1.5 μg/mL; 48 h) concentration-dependently arrests human monocytic leukemia U937 cells at the G1 phase of the cell cycle, and reduces the proportion of cells entering the S and G2/M phases. It also induces chromatin condensation and fragmentation, two markers of apoptosis, in human monocytic leukemia U937 cells in a concentration-dependent manner[4]. Momilactone B (0.25-2 μg/mL; 48 h) induces apoptosis in human monocytic leukemia U937 cells in a concentration-dependent manner, and induces cleavage of the apoptosis marker PARP in human monocytic leukemia U937 cells also in a concentration-dependent manner[4]. Momilactone B (0.25-1.5 μg/mL; 48 h) slightly reduces the protein level of cyclin E in human monocytic leukemia U937 cells, induces p21 expression in a p53-independent manner, inhibits the kinase activities of Cdk4 and Cdk6, dephosphorylates pRB, and enhances the binding of pRB to E2F-1 and E2F-4[4].

References:

[1]. Quan NV, et al. Momilactones A and B Are α-Amylase and α-Glucosidase Inhibitors. Molecules

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(Basel, Switzerland). 2019 Jan 29;24(3):482.
[2]. Kim SJ, et al. Cytotoxic and antitumor activity of momilactone B from rice hulls. Journal of agricultural and food chemistry. 2007 Mar 07;55(5):1702-6.
[3]. Kato-Noguchi H. The Role of Momilactones in Rice Allelopathy. Journal of Chemical Ecology, 2013, 39: 175-185.
[4]. Park C, et al. Momilactone B induces apoptosis and G1 arrest of the cell cycle in human monocytic leukemia U937 cells through downregulation of pRB phosphorylation and induction of the cyclin-dependent kinase inhibitor p21Waf1/Cip1. Oncology reports. 2014 Apr;31(4):1653-60.

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