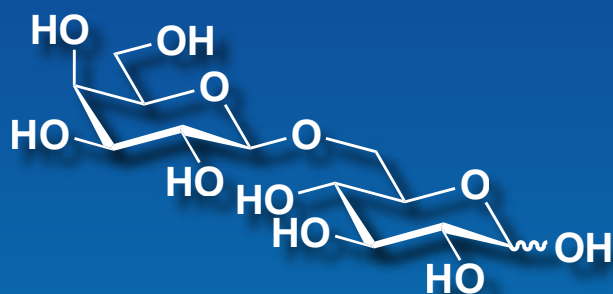


Allolactose



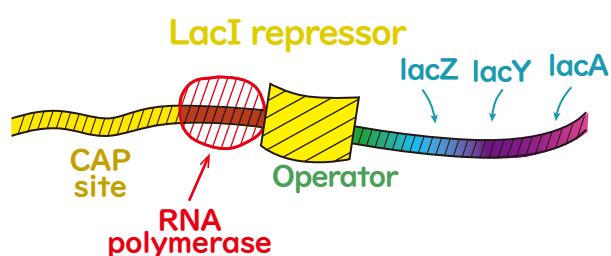
Allolactose

100mg

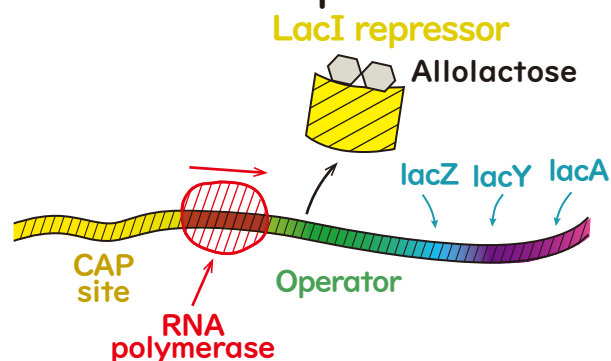
[A2630]

Allolactose — The Natural Inducer of The *lac* operon

“Transcription OFF”



“Transcription ON”



Allolactose is a β 1-6 isomer of lactose and serves as the natural inducer of the *lac* operon in *E. coli*. It binds to the LacI repressor, causing a conformational change that lifts repression and initiates transcription of previously silenced genes. Unlike IPTG — a synthetic, non-metabolizable analog — Allolactose is a natural, metabolizable molecule, allowing gene expression control under more physiological conditions.¹⁾ It is especially useful for studying gene expression dynamics, transient responses, and for designing transcriptional control circuits in synthetic biology and biosensor applications.²⁾

Related Products

Isopropyl 1-Thio- β -D-galactopyranoside (= IPTG)	1g / 5g [I0328]
5-Bromo-4-chloro-3-indolyl β -D-Galactopyranoside [for Biochemical Research]	200mg / 1g [B3201]
5-Bromo-3-indolyl β -D-Galactopyranoside [for Biochemical Research]	20mg / 100mg [B3470]
6-Chloro-3-indolyl β -D-Galactopyranoside [for Biochemical Research]	20mg / 100mg [C2371]

Allolactose — A Prebiotically Active GOS

β -Galactosidase, which synthesizes allolactose *in vivo*, is known as an enzyme that hydrolyzes β -galactosidic bonds. In recent years, particular attention has been given to β -galactosidase derived from lactic acid bacteria (LAB). β -Galactosidases from LAB are important not only for their hydrolytic activity but also for their role in the synthesis of galacto-oligosaccharides (GOS), a type of prebiotic. It has been found that the structural diversity of GOS — such as chain length, linkage type, and composition — directly influences fermentation patterns by probiotic gut bacteria, which is key to their effects on the intestinal environment. Traditionally, trisaccharides and tetrasaccharides were considered the main active components of GOS. However, recent studies have revealed that disaccharides with $\beta(1-6)$ linkages, particularly allolactose and galactobiose, also promote the growth of bifidobacteria and exhibit prebiotic activity.³⁾ Thus, the generation of allolactose by β -galactosidase plays a role in various physiological effects, including the maintenance of gut microbiota balance, immune regulation, allergy prevention, and skin health. On the other hand, the relationships between specific GOS structures and their bioactivities are not yet fully understood, and further research is highly anticipated.⁴⁾

We offer high-purity, chemically synthesized allolactose that is ideal for such applied research.

Related Products

D-(+)-Cellobiose	5g / 25g [C0056]
Cellotriose	20mg [C2795]
D-(+)-Lactose Monohydrate	25g / 500g [L0008]
Lactulose	25g [L0140]
D-(+)-Melibiose Monohydrate	1g / 10g [M0050]
2-Nitrophenyl β -D-Galactopyranoside [Substrate for β -D-Galactosidase]	1g / 5g / 25g [N0418]
4-Nitrophenyl β -D-Galactopyranoside [Substrate for β -Galactosidase]	1g / 5g [N0616]
4-Methylumbelliferyl β -D-Galactopyranoside	1g / 5g [M2134]

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