

IBMX Solution (1 M)

Cat. No.: PB180616

Size: 0.1mL

General Information

Solvent	DMSO
Concentration	1 mol/L
Storage	-5~-20°C
Whether to avoid light	Shading light
Shipping	Ice bag
Expiration date	12 months

Background

3-Isobutyl-1-methylxanthine (IBMX) is a nonspecific phosphodiesterase (PDE) inhibitor that mainly acts on PDE3, PDE4, and PDE5, with IC₅₀ values of 6.5 μM, 26.3 μM, and 31.7 μM, respectively. By inhibiting the PDE activity, IBMX was able to significantly increase the intracellular levels of cycloadenosine monophosphate (cAMP) and cycloguanosine (cGMP) levels, thereby activating AGC protein kinase (PKA). In addition, IBMX binds to adenosine receptors and antagonizes the inhibitory effect of natural agonists.

In cell biology, IBMX activates PKA by increasing cAMP levels, which in turn inhibits cell proliferation, promotes differentiation, and induces apoptosis. Studies have indicated that IBMX inhibits the phenylephrine-induced release of 5-hydroxytryptamine from neuroendocrine epithelial cells of airway mucosa (IC₅₀: 1.3 μM). Meanwhile, IBMX, as an adenosine receptor antagonist, exhibited inhibitory effects on ion channels in neuromuscular junctions, GH3 cells and vascular smooth muscle cells, and induced the release of intracellularly stored calcium ions from sensory neurons.

By suppressing phosphodiesterase (PDE) activity and raising intracellular concentrations of cyclic adenosine monophosphate (cAMP) and cyclic guanosine monophosphate (cGMP), IBMX controls signaling and physiological functions of organoids in organoid research. This makes it a crucial tool for building organoid models and conducting functional studies.

Notes

1. This product is only used for scientific research or further research, not for diagnosis and treatment.
2. This product was sterilized by 0.1 μm filtration and can be used directly after melting.
3. It is necessary to pay attention to the aseptic operation and avoid the contamination.
4. Before using, the product should be thawed at 2-8°C and shaken thoroughly; repeated freeze-thaw cycles are not advised.
5. If precipitation happens after thawing, the contents can be resuspended by pipetting or vortex mixing. After incubating the solution at 37°C for 20 to 30 minutes or letting it stand at room temperature for about an hour, check to see if the precipitate dissolves as intended. If the product dissolves completely, it can be used as usual.
6. This product is a concentrated solution and should be diluted prior to use as required.
7. The product should be used within a month if stored regularly at 2-8°C. Keep in a frozen state at -5~-20°C for extended storage. Long-term storage at room temperature or between 2-8°C is not recommended. When lesser amounts are required, aliquoting is advised to prevent repeated freeze-thaw cycles.