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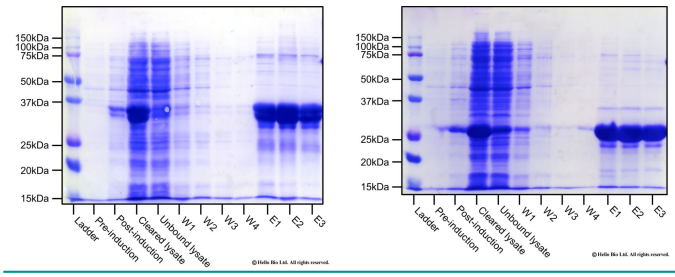
DATASHEET

IPTG

Product overview

Name	IPTG
Cat No	HB3941
Alternative names	Isopropylthiogalactoside
Biological action	Inducer
Purity	>99%
Description	Protein expression inducer. Frequently used with X-Gal in cloning procedures.

Images



Biological Data

Biological description	As an allolactose mimic, IPTG can induce the lac operon and is therefore commonly used to induce protein expression.
Application notes	IPTG is commonly used with X-Gal in blue/white screening for colony selection. **#Protocol 1: IPTG induction of protein production in E. coli**

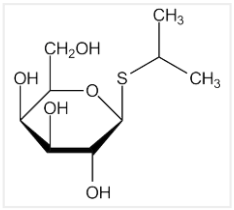
- BL21 *E. coli* were transformed with plasmids containing GST or a GST fusion protein under the control of the lac operon using standard protocols (see Froger and Hall., 2007).
- Transformed colonies were cultured in 2xYT medium containing 50µg/ml kanamycin (HB4429) at 10ml scale before this was transferred into 1L cultures and cultured at 37°C.
- Cells were cultured until OD_{600} reached 0.6 before protein expression was induced with the adittion of 0.5mM IPTG and the temperature was reduced to 25ºC.
- Cells were grown for a further 4 hours before being spun at 6,400g for 15 minutes at 4°C to pellet cells. This was then resuspended in lysis buffer (25mM Tris, 150mM NaCl, 10% glycerol, 1% triton X-100, 1x protease inhibitors (HB9081), pH7.5), sonicated and allowed to solubilise before then being spun at 48,300g for 25 minutes at 4°C.
- The supernatent was removed and subsequently purified using glutathione beads.
- Samples from all stages of the protein production process were loaded onto a 15% acrylamide gel, run at 90/170V then transferred to PVDF (400mA/90 mins) before being visualised using Coomassie dye (HB0739).

Solubility & Handling

Storage instructions	+4°C

Solubility overview	Soluble in water (100 mM)
Important	This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not for human or veterinary use.

Chemical Data

Chemical name	Isopropyl-beta-D-thiogalactopyranoside
Molecular Weight	238.3
Chemical structure	
Molecular Formula	$C_9H_{18}O_5S$
CAS Number	367-93-1
PubChem identifier	656894
SMILES	O[C@@H]1[C@H](O)[C@@H](O)[C@H](SC(C)C)O[C@@H]1CO
InChi	InChI=1S/C9H18O5S/c1-4(2)15-9-8(13)7(12)6(11)5(3-10)14-9/h4-13H,3H2,1-2H3/t5-,6+,7+,8-,9+/m1/s1
InChiKey	BPHPUYQFMNQIOC-IVORRVBJSA-N
MDL number	MFCD00063273
Appearance	White crystalline powder

References

A self-inducible heterologous protein expression system in Escherichia coli

Briand L *et al* (2016) Sci Rep. 6

PubMedID 27611846

The E. coli pET expression system revisited-mechanistic correlation between glucose and lactose uptake

Wurm DJ *et al* (2016) Appl Microbiol Biotechnol 100(20)

PubMedID 27229726

Efficient and rapid procedure for blue-white screening of recombinant bacterial clones

Maas S (1999) Biotechniques 27(6)

PubMedID 10631489