AIM-Super Growth Medium with Trace elements **G147**

AIM-Super Growth Medium w/o Trace elements is used to grow IPTG-inducible expression in bacterial strains.

Composition :**

Ingredients	**Grams/Liter**
Tryptone	35
Yeast Extract	20
Ammonium sulphate [$(NH4)_2SO_4$]	3.3
KH_2PO_4	6.8
Na_2HPO_4	7.1
Glucose	0.5
Lactose	2.0
$MgSO_4$	0.15
100X Trace elements	0.0044

Directions :

Suspend 74.8544 gram powdered medium in 1 liter distilled water. Sterilize by autoclaving at 10 lbs pressure (115°C) for 20 minutes. Mix well and dispense as desired.

Principle and Interpretation :

Auto Induction Media (AIM) was first formulated and developed by W. studier (1) to grow IPTG-inducible expression strains. The principle of AIM is based on carbon sources in the medium that are metabolized differentially to promote high density cell growth and automatically induce protein expression from lac promoters. AIM contains both glucose and lactose as the carbon source. A limited concentration of glucose is metabolized preferentially during growth, which prevents uptake of lactose until the glucose is depleted, usually in mid to late log phase. As the glucose is depleted, lactose can be taken up and converted by β-galactosidase to the inducer allolactose. Allolactose causes release of lac repressor from its specific binding sites in the DNA and thereby induces expression of T7 RNA polymerase from the lacUV5 promoter and unblocks T7lac promoters, allowing expression of target proteins by T7 RNA polymerase.

With AIM media a high density cell growth is followed by a spontaneous induction of protein expression. There is no need to monitor the cell density and there is no conventional induction with IPTG. The principle of AIM media is based on carbon

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sources in the medium that are metabolized differentially to promote high density cell growth and automatically induce protein expression from lac promoters.
Parallel growth of many non-induced or auto-induced cultures is feasible because cultures are simply inoculated and grown to saturation. This is a great convenience and simplifies manual or automated induction and analysis of multiple clones compared to conventional IPTG induction, which requires monitoring growth of each culture and adding inducer at the proper stage of growth.

Quality Control :

Appearance of Powder :
Cream to yellow coloured, homogeneous, free flowing powder.

Colour and Clarity :
Light amber coloured, clear solution without any precipitate.

Cultural Response :
Cultural characteristics observed after incubation at 35-37°C for 18 - 48 hours.

Organisms (ATCC)	Growth
Escherichia coli ATCC23724	good-luxuriant
Escherichia coli ATCC25922	good-luxuriant
Escherichia coli DH5alpha MTCC1652	good-luxuriant

References :

1. Studier, F. W. 2005. Protein production by auto-induction in high-density shaking cultures. Protein expression and purification 41: 207-234.

Storage and Shelf-life :

Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label.

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