

AIM -Super Growth w/o Trace Element

Cat. 2095

To grow IPTG inducible expression in bacterial strains

Practical information

| Applications | Categories |
|--------------------|-------------|
| Protein expression | General use |

Principles and uses

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 glucose as well as 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 the enzyme β -galactosidase to the inducer allolactose. Allolactose causes the 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 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. For higher saturation density than AIM-LB Broth (2094).

Formula in g/L

| | | | |
|-------------------|------|-------------------------|-----|
| Glucose | 0,5 | Alpha-lactose | 2 |
| Ammonium sulfate | 3,3 | Disodium phosphate | 7,1 |
| Magnesium sulfate | 0,15 | Monopotassium phosphate | 6,8 |
| Tryptone | 35 | Yeast extract | 20 |

Preparation

Suspend 74.85 grams of the medium in one liter of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for 1 minute or until complete dissolution. Sterilize in autoclave at 115°C for 20 minutes. Mix well and dispense as wished.

Instructions for use

- Inoculate and incubate at a temperature of 35±2 °C and observed after 18-48 hours.

Quality control

| Solubility | Appearance | Color of the dehydrated medium | Color of the prepared medium | Final pH (25°C) |
|------------|-------------|--------------------------------|------------------------------|-----------------|
| w/o rests | Fine powder | Beige | Amber | 7,0 ± 0,1 |

Microbiological test

Incubation conditions: (35±2 °C / 18-48 h)

| Microrganisms | Specification |
|---------------|---------------|
|---------------|---------------|

Escherichia coli ATCC 23724
Escherichia coli ATCC 33694
Escherichia coli ATCC 33849
Escherichia coli ATCC 39403
Escherichia coli ATCC 47014

Good growth
Good growth
Good growth
Good growth
Good growth

Storage

Temp. Min.:2 °C
Temp. Max.:25 °C

Bibliography

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