Product Information

# MediaBoost

Non-animal Sterile Microbial Growth Supplement

**MBD0055**

## Product Description

Studying microbial species via cutting edge genomic techniques such as next generation sequencing (NGS) has become increasingly prevalent in recent years; however, genomic methods alone cannot fully replace experimental testing of microbial species.[1,2] Therefore, the ability to culture microbes in a laboratory setting remains essential for comprehensive study of these communities.

Some microbial species can be challenging to culture in standard culture media.[3] Often species of interest or a specific process require specialized media compositions, to provide an optimal environment for maximal proliferation and yield.[4] A few examples include:

- Chemically defined minimal growth media are often used to grow bacteria for proteomics, as a base for stable isotope enrichment in NMR protein structure-function studies[5], but growth can be limited without the addition of an effective supplement.[6]
- Use of chemically defined minimal growth media in the production of secreted microbial proteins to ensure reproducibility and a higher concentration of the microbial-produced protein of interest.[7,8]

MediaBoost is a patented (US 10,696,942), ready-to-use, non-animal, protein free, microbial growth media supplement that amplifies the growth of gram-positive and gram-negative bacteria, and yeast species in minimal and/or standard microbial growth media*. It can also induce spore germination in some species.

* MediaBoost is compatible with some but not all strains and media combinations and should be tested on a case-by-case basis by the researcher for experiment optimization. The first table in Application Data shows some of the strains and media combinations that have been tested.

## Features and Benefits

- Boosts growth of microorganisms
- Reduces germination time
- Ready-made sterile solution
- Protein-free

## Precautions and Disclaimer

This product is for R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

## Storage/Stability

Store this product refrigerated (2-8 °C).

## Preparation Instructions

The product is provided as a convenient, ready-made sterile solution. No preparation or filtering is necessary before use. MediaBoost is sterile and should be added to the culture medium after autoclaving, at a 1:30-1:300 dilution. The ideal dilution of MediaBoost may vary for each specific strain and experimental optimization by the researcher may be required.

## Application Data

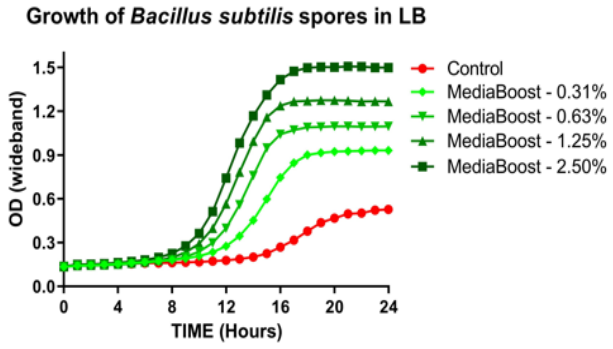
### Compatibility of MediaBoost with Relevant Species and Culture Media.

(✓) indicates that a relative increase in growth was observed when compared to media without MediaBoost, and (x) indicates that no growth improvement was observed with MediaBoost. Colored cells indicate media and species not tested together with MediaBoost.

| Microbe/ Media Type | LB | 1/3 LB | BM2 | M9 | IMDM | DMEM | YPD | 1/3 YPD | MRS | 1/3 MRS |
|---|---|---|---|---|---|---|---|---|---|---|
| *Bacillus subtilis* | ✓ | | | | ✓ | ✓ | | | | |
| *Lactobacillus rhamnosus* | ✓ | ✓ | x | x | | ✓ | | | ✓ | ✓ |
| *Lactobacillus reuteri* | | | | | ✓ | | | | ✓ | ✓ |
| *Lactobacillus salivarius* | | | | | | | | | ✓ | ✓ |
| *Bacillus coagulans* | | | | | ✓ | | | | | |
| *Lactococcus lactis* | | | | | ✓ | | | | | |
| *Escherichia coli* | x | | | | ✓ | | | | | |
| *Saccharomyces cerevisiae* | x | | ✓ | ✓ | ✓ | | ✓ | ✓ | | |
| *Pseudomonas aeruginosa* | x | | | ✓ | | | | | | |

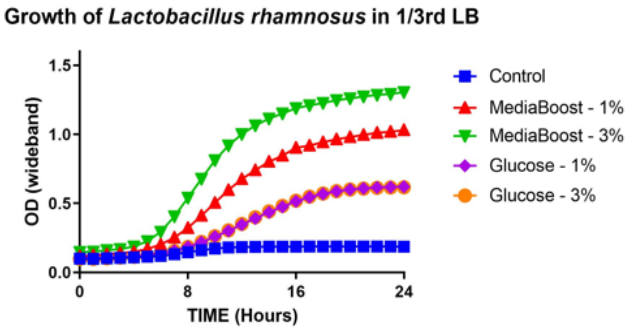
### Growth of *Bacillus subtilis* Spores in LB

*Bacillus subtilis*, a gram-positive species, were cultured in LB media with increasing concentrations of MediaBoost. An untreated neat culture served as a negative control. Data points represent means of triplicate cultures and S.D. did not exceed 10% of mean.



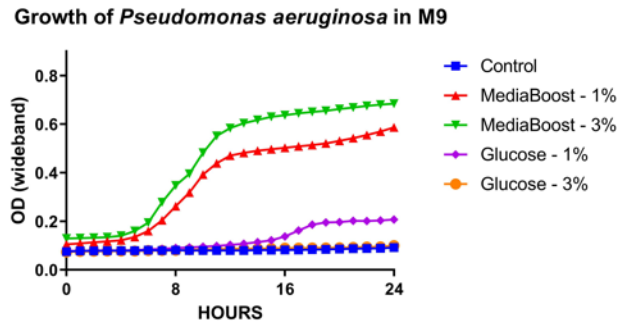

### Growth of *Lactobacillus rhamnosus* in 1/3rd LB

*Lactobacillus rhamnosus*, a gram-positive species, were cultured in 1/3 LB media with 1% or 3% MediaBoost. An untreated neat culture and cultures with an equivalent amount of added 50% glucose solution served as negative controls. MediaBoost increases growth more effectively than glucose, indicating that MediaBoost offers a more complex supplemental advantage than serving as a simple carbon source. Data points represent means of triplicate cultures and S.D. did not exceed 10% of mean.




### Growth of *Pseudomonas aeruginosa* in M9

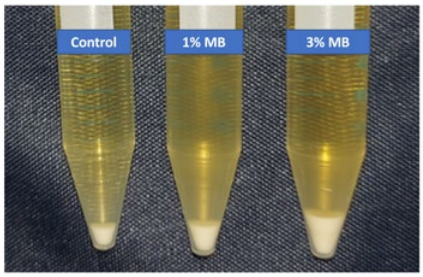
*Pseudomonas aeruginosa*, a gram-negative species, were cultured in M9 minimal culture media with 1% or 3% MediaBoost. An untreated neat culture and cultures with an equivalent amount of added 50% glucose solution served as negative controls. Data points represent means of triplicate cultures and S.D. did not exceed 10% of mean.



## Growth of Saccharomyces *cerevisiae* in YPD

*Saccharomyces cerevisiae* were cultured in YPD media for 24 hours at 32°C in a shaker flask, with 1% (middle tube) or 3% (right tube) MediaBoost (MB). An untreated neat culture served as a negative control (left tube). Aliquots were removed and tubes were centrifuged at high speed to obtain pellets.

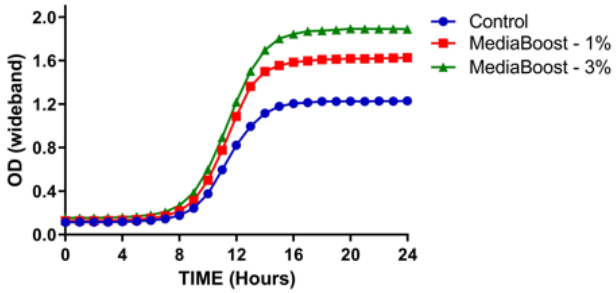
**Growth of *Saccharomyces cerevisiae* in YPD**




## Growth of *Saccharomyces cerevisiae* in 1/3rd YPD

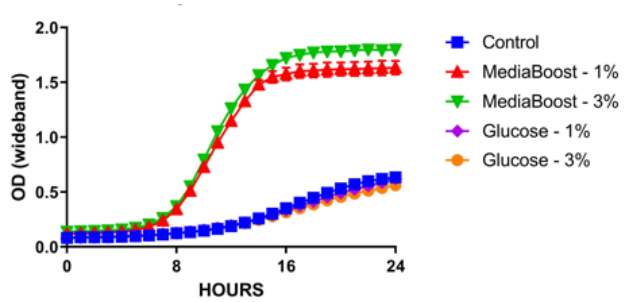
*Saccharomyces cerevisiae* were cultured in 1/3 YPD media with 1% or 3% MediaBoost. The addition of MediaBoost can substantially reduce the amount of basal medium required for growth such that one-half to one-third medium can be used. This facilitates not only cost reduction, but also more efficient downstream processing of microbial products.[7] An untreated neat culture served as the negative control in this experiment. Data points represent means of triplicate cultures and S.D. did not exceed 10% of mean.

**Growth of *Saccharomyces cerevisiae* in 1/3rd YPD**



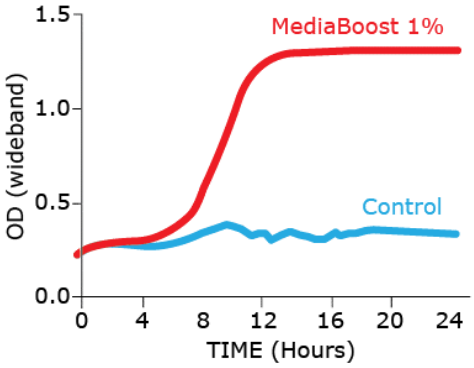

## Growth of *Saccharomyces cerevisiae* in BM2

*Saccharomyces cerevisiae* were cultured in BM2 minimal media with 1% or 3% MediaBoost. An untreated neat culture and cultures with an equivalent amount of added 50% glucose solution served as negative controls. Data points represent means of triplicate cultures and S.D. did not exceed 10% of mean.




## Growth of *Saccharomyces cerevisiae* in IMDM

*Saccharomyces cerevisiae* was cultured in IMDM media with MediaBoost. MediaBoost can be added to protein-free media traditionally used for eukaryotic cell culture, such as DMEM and IMDM, to make microbial culture possible in these media as well. An untreated neat culture served as the negative control in this experiment. Data points represent means of triplicate cultures and S.D. did not exceed 10% of mean.



## References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