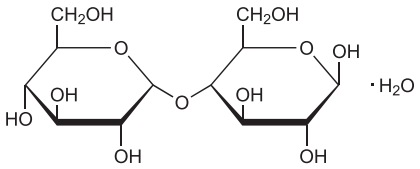
For Culture Media

What is MALTOSE PH ?

- Maltose is a reducing disaccharide consisting of two glucose molecules linked by an α-1,4 bond
- Maltose is manufactured from starch by enzyme technology
- MALTOSE PH is highly purified crystalline maltose monohydrate with low endotoxin

Structure

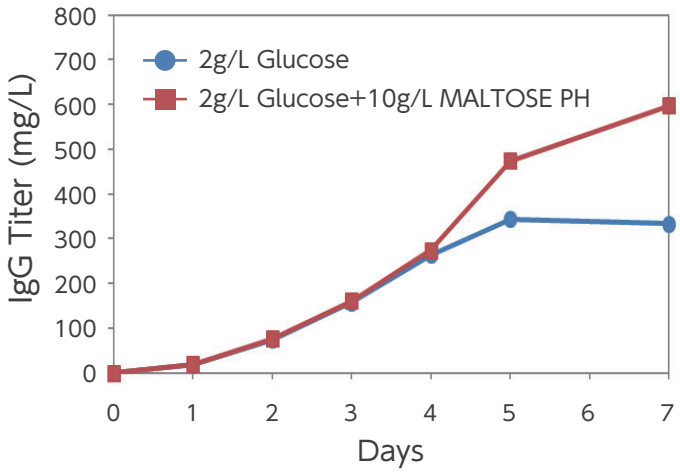


Chemical Formula: $C_{12}H_{22}O_{11} \cdot H_2O$
Molecular weight: 360.31
CAS RN®: 6363-53-7

Effect of MALTOSE PH supplementation on antibody production by CHO cell

Methods

- CHO-K1 cells were inoculated at 0.3 × 10^6 cells/mL in duplicates in a DMEM/F12-based protein free chemically defined medium (PFCDM) supplemented with 2 g/L D-(+)-glucose, or glucose with an additional 10 g/L MALTOSE PH in single-use Erlenmeyer flasks.
- The cultures were incubated in a humidified incubator at 37℃, 8% CO_2 and a rotation speed of 110 rpm. Cell culture supernatants were collected daily on days 0-5 and 7, and monoclonal IgG antibody (anti-Her2) titers were determined by nephelometry using IMMAGE 800 (Beckman Coulter).



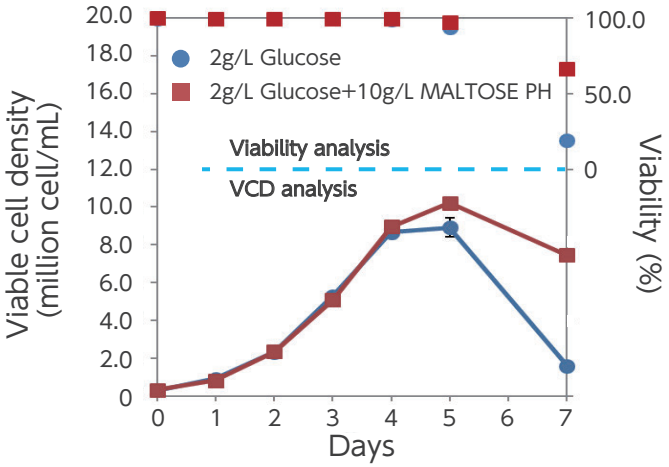
Results

- Two g/L of glucose was chosen as the base glucose concentration because this will allow for a premature but controlled cell growth constraint due to glucose depletion on Day 4.
- IgG titer reached a maximum of 340 mg/L on Day 5 in the culture containing 2 g/L glucose as a carbon source.
- IgG production continued in the MALTOSE PH supplemented cultures Days 5 through 7 to reach 600 mg/L.

Effect of MALTOSE PH supplementation on cell viability and viable density

Methods

- The CHO-K1 cells were inoculated and cultured as described in the previous experiment.
- Viable cell density (VCD) and culture viability were analyzed by Vi-Cell XR Cell Viability Analyzer (Beckman Coulter, Brea, CA) according to manufacturer's instructions.



Results

- Growth of CHO-K1 cells reached a maximum viable cell density (VCD) of 8.9 × 10^6 cells/mL on Day 5 when cultured using 2 g/L glucose.
- MALTOSE PH supplemented cultures attained a higher maximum VCD of 10.2 × 10^6 cells/mL and longer culture viability compared to the culture containing only 2 g/L glucose.

All the data were provided by Dr. Say Kong Ng of Bioprocessing Technology Institute (BTI)

Summary

- MALTOSE PH can be used by the CHO-K1 cells as a carbon source to maintain culture viability and IgG production upon glucose depletion.
- MALTOSE PH supplementation to the CHO-K1 cell culture in addition to glucose increased the IgG titer compared to the culture with only glucose as a carbon source.
- MALTOSE PH supplementation along with glucose improved the growth of CHO-K1 cell compared to the culture without MALTOSE PH supplementation.
- It demonstrates that MALTOSE PH can effectively improve the productivity of antibody when used to supplement glucose as a carbon source.

Reference

Application of maltose as energy source in protein-free CHO-K1 culture to improve the production of recombinant monoclonal antibody. Leong DSZ *et al*. Sci Rep. 2018 Mar 6;8(1):4037.

Product Information

HIGH PURITY MALTOSE

Product Name	Purity/Other	Packaging	Regulatory Approval	Others
MALTOSE PH	Not less than 98.0% /Low Endotoxin	25kg PE bag in a carton box	・JP ・CP	・US Type II DMF ・China DMF ・Kosher, Halal

MANUFACTURER : **Nagase Viita Co., Ltd.**
CONTACT : **Nagase & Co., Ltd.**
Life & Healthcare Products Department
E-mail: dnfct@ex.nagase.co.jp

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Nagase Viita