

D-Galactose and D-Mannose

Fine-tune your cell culture outcomes with specialty carbohydrates



PROVIDING A BALANCED ENERGY SUPPLY

Cells growing in cell culture usually cover their energy needs with carbohydrates such as D-Glucose and the amino acid L-Glutamine. However, rapid D-Glucose consumption often leads to excessive lactate formation, which can negatively impact cell culture performance.

The monosaccharides D-Galactose and D-Mannose are converted at a reduced rate by many cells and can be used to replace D-Glucose partially or fully. This can result in a more balanced primary metabolism, reduced side product formation and an optimized cell culture performance, e.g. for production of therapeutic proteins like antibodies.

BUILDING BLOCKS FOR OPTIMIZING PROTEIN QUALITY

In addition to providing an energy source, sugars are crucial building blocks for protein glycosylation. Obtaining the right glycosylation profile is a key product quality feature for recombinant proteins, and limitations in intracellular glycosylation precursors can negatively impact product quality. It has been shown that D-Galactose and D-Mannose can be used to tune the glycosylation profile of therapeutic proteins in mammalian cell culture.^{[1][2]}

Example:
Studies indicate that supplementing 10–40 mM D-Galactose resulted in enhanced N-linked glycans (galactosylation and sialylation increase) of proteins produced in CHO cells.^{[3][4]}

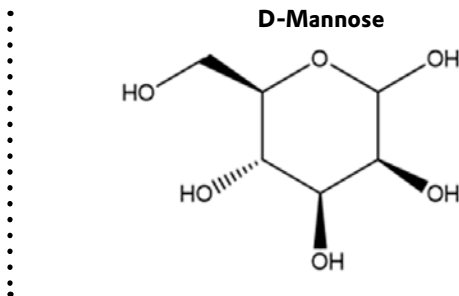
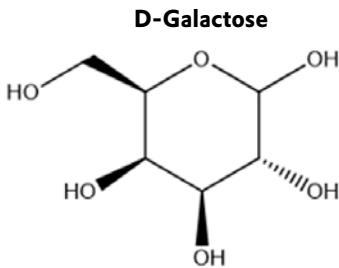
HIGH QUALITY CARBOHYDRATES FOR CELL CULTURE

Evonik offers D-Galactose and D-Mannose as highly pure, plant-derived powders that fulfil the high-quality requirements of biopharmaceutical cell culture applications.

Products	Purity (HPLC)	Appearance	Storage	Packaging size
D-Galactose D-Mannose	≥ 99 %	White to off-white powder	Ambient temperature	25 kg

References

- ^[1] Tachibana, H. *et al.*, Cytotechnology 1994, 16(3), 151-7
- ^[2] Zhang, L. *et al.*, J. Biotechnol. 2019, 289, 71-79
- ^[3] Liu, J. *et al.*, World J Micr. Biotech. 2015, 31, 1147-1156
- ^[4] Kildegaard, H.F. *et al.*, Biotechnol. Bioeng. 2015, 11, 359-366



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Evonik Operations GmbH
Health Care Business Line
Pharma & Food Ingredients

cQrex@evonik.com
evonik.com/cellculture