Product Information

Casein from bovine milk

C5890

Product Description

CAS Registry Number: 9000-71-9

Casein is a phosphoprotein found in milk. Casein has numerous experimental applications, including:

- Use as a blocking agent in immunochemistry[1]
- Recovery of enzyme activity from SDS extracted samples
- As a substrate for protease and kinase assays[2]

The major casein subunits may be distinguished by electrophoresis and are designated as α-, β-, γ-, and κ-caseins, in order of decreasing mobility at pH 7.0.[3] The approximate casein composition of milk is as follows, in terms of grams per liter (g/L):

- α-s1 (12-15 g/L)
- α-s2 (3-4 g/L)
- β (9-11 g/L)
- κ (2-4 g/L)

The casein subunits vary primarily in molecular weight, isoelectric point, and level of phosphorylation. The following table lists these differences.[4,5]

Subunit	MW (kDa)	pI	Phosphates /mole	E1% (280 nm)
α-s1	22 – 23.7	4.2 – 4.7	8 – 10	10.0 – 10.1
α-s2	25	---	10 – 13	---
β	24	4.6 – 5.1	4 – 5	4.5 – 4.7
κ	19	4.1 – 5.8	1	10.5

The nomenclature for proteins in bovine milk has been published.[4]

Several theses[6] and dissertations[7-12] have cited use of product C5890 in their research protocols.

Product

This product has been treated to remove almost all free phosphate from the starting material.

Precautions and Disclaimer

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

This product may be stored at room temperature.

Preparation Instructions

This product can be suspended in 1 M NaOH (50 mg/mL), yielding a turbid, faint yellow solution.

References

1. Hsieh, Y.Y. *et al*., *Mol. Cell*, **50(1)**, 82-92 (2013).
2. Richert, N.D. *et al*., *J. Biol. Chem*., **257(12)**, 7143-7150 (1982).
3. *The Merck Index*, 12th ed., Entry# 1934 (1996).
4. Eigel, W.N. *et al*., *J. Dairy Sci*., **67(8)**, 1599-1631 (1984).
5. Modler, H.W., *J. Dairy Sci*., **68(9)**, 2195-2205 (1985).
6. Rasmussen, Janet K., "Reactive polyphenols and dissolved nutrients in a nitrogen-limited headwater catchment, Western Cascades, Oregon, USA". Oregon State University, M.S. thesis, pp. 27, 91 (2009).
7. Kim, Hyeung-Rak, "Characterization and potential utilisation of proteases from the hepatopancreas of crawfish, *Procambarus ciarki*". Louisiana State University, Ph.D. dissertation, p. 27 (1991).

8. Rosales M, Mauricio, "*In vitro* assessment of the nutritive value of mixtures of leaves from tropical fodder trees". University of Oxford, Ph.D. dissertation, p. 88 (1996).
9. Isaacs, Gary David, "Molecular mechanisms of estrogen-dependent transcriptional regulation through AP-1". Cornell University, Ph.D. dissertation, p. 58 (2009).
10. Ernst, Anne-Sophie, "Impact of the receptor tyrosine kinase EphB2 on cerebral ischemia in mice". Ruperto Carola University Heidelberg, Dr. rer. nat. dissertation, p. 20 (2018).
11. Nistler, Angelika Maria, "Magnetic Nanocomposites for Rapid Biosensing of Staphylococcal Enterotoxin B in Milk". Technischen Universität München, Dr. rer. nat. dissertation, p. 69 (2018).
12. Ferro, Luke S., "Investigating how kinesin and dynein walk on complex microtubule surfaces". University of California Berkeley, Ph.D. dissertation, pp. 18, 71 (2020).

Notice

We provide information and advice to our customers on application technologies and regulatory matters to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.

The information in this document is subject to change without notice and should not be construed as a commitment by the manufacturing or selling entity, or an affiliate. We assume no responsibility for any errors that may appear in this document.

Technical Assistance

Visit the tech service page at SigmaAldrich.com/techservice.

Standard Warranty

The applicable warranty for the products listed in this publication may be found at SigmaAldrich.com/terms.

Contact Information

For the location of the office nearest you, go to SigmaAldrich.com/offices.

C5890pis Rev 05/22 GCY,MWM,NSB,RBG,SG,MAM