



Product Information

Lactoferrin from human milk

Product Number **L 0520**
Storage Temperature 2-8 °C

Product Description

Molecular Weight = 82.4 kDa^{1,2}
Extinction Coefficient: $E^{1\%}_{1\text{cm}}$ = 110.96 (280 nm),³
 $E^{1\%}_{1\text{cm}}$ = 0.540 (465 nm), 14.6 (280 nm), and
0.510 (470 nm)³
pI: 8.7
Synonym: Lactotransferrin

Lactoferrin is an iron binding protein. It is structurally similar to transferrin, the plasma iron transport protein, but with a much higher affinity for iron (250-fold). It has two metal-binding sites, each of which can bind a ferric ion (Fe^{3+}) together with a bicarbonate anion.^{1,4} It is very abundant in colostrum and small amounts can also be found in tears, saliva, mucous secretions, and in the secondary granules of neutrophils. It is made by mucosal epithelium and neutrophils and is released by these cells in response to inflammatory stimuli. Bacterial growth is inhibited by the ability of lactoferrin to sequester iron and also to permeabilize bacterial cell walls by binding to lipopolysaccharides through its N-terminus.⁵ Lactoferrin can inhibit viral infection by binding tightly to the viral envelope protein. This prevents cell-virus fusion by blocking the binding domain.⁶ Lactoferrin appears to activate host defense systems, in part, by stimulating the release of interleukin-8, a neutrophil activator.⁷ It may also be involved in antibody and interleukin synthesis, lymphocyte proliferation, and complement activation.

Lactoferrin is a unique polyfunctional protein that influences cell proliferation and differentiation. It can regulate granulopoiesis and DNA synthesis in some cells. Lactoferrin inhibits prostaglandin synthesis in human milk macrophages and activates the nonspecific immune response by stimulating phagocytosis and complement.⁸ It can interact with DNA, RNA, proteins, polysaccharides, and heparin-like polyanions. Lactoferrin is often found complexed.

It was recently demonstrated that lactoferrin also possesses ribonuclease activity and is a transcription factor.⁸ It has also been implicated in cancer prevention.⁹

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is soluble in water (10 mg/ml), yielding a clear to slightly hazy, colorless to faint yellow solution.

References

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9. Tsuda, H., et al., Cancer prevention by bovine lactoferrin and underlying mechanisms-a review of experimental and clinical studies. *Biochem. Cell. Biol.*, **80(1)**, 131-136 (2002).

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