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ProductInformation

Lactoferrin
from bovine colostrum

Product Number **L 4765**
Storage Temperature 2-8 °C

Product Description

Molecular Weight = 83.1 kDa[1]
Synonym: Lactotransferrin[1]

Lactoferrin is an iron binding protein. It is structually similar to transferrin, the plasma iron transport protein, but has 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.[2,3] 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 both by the ability of lactoferrin to sequester iron and also by the ability to permeabilize bacterial cell walls by binding to lipopolysaccharides through its N-terminus.[4] Lactoferrin can inhibit viral infection by binding tightly to the viral envelope protein. This prevents cell-virus fusion by blocking the binding domain.[5] Lactoferrin appears to activate host defense systems, in part, by stimulating the release of interleukin-8, a neutrophil activator.[6] 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.[7] 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.[7] It has also been implicated in cancer prevention.[8]

Precautions and Disclaimer

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

Preparation Instructions

This product is soluble in water (5 mg/ml), yielding a clear to slightly hazy, pink to orange solution.

References

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6. Elass, E., et al., Lactoferrin inhibits the lipopolysaccharide-induced expression and proteoglycan-binding ability of interleukin-8 in human endothelial cells. Infect. Immun., **70(4)**, 1860-1866 (2002).

7. Kanyshkova, T. G., et al., Lactoferrin and its biological functions. Biochemistry (Mosc)., **66(1)**, 1-7 (2001).

8. 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).

CMH/RXR 4/03