Inhibition of Epstein-Barr virus infection by lactoferrin.


Source

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Abstract

Lactoferrin (LF) is a multifunctional glycoprotein that plays an important role in native immune defense against infections, including human herpetic viruses, such as cytomegalovirus and herpes simplex virus types 1 and 2. However, its anti-Epstein-Barr virus (EBV, a γ-herpesvirus) function has not been reported in the literature. EBV is widespread in all human populations and is believed to be linked to tumorigenesis, such as lymphomas and nasopharyngeal carcinoma (NPC). We previously reported that LF expressed a significantly lower level in NPC tissues and was a likely tumor suppressor. Since EBV infection is a major carcinogen of NPC development, we investigated the effect of LF on EBV infection and found that LF could protect human primary B lymphocytes and nasopharyngeal epithelial cells from EBV infection, but had no effect on EBV genome DNA replication. LF prevented EBV infection of primary B cells mediated by its direct binding to the EBV receptor (CD21) on the B-cell surface. Tissue array immunohistochemistry revealed that LF expression was significantly downregulated in NPC specimens, in which high EBV viral capsid antigen-IgA levels were observed. These data suggest that LF may inhibit EBV infection and that its downregulation could contribute to NPC development.

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