

## Antiviral effects of nisin, lysozyme, lactoferrin and their mixtures against bovine viral diarrhoea virus

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Received 2019 Jul 1; Accepted 2019 Aug 29.

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### Abstract

#### Background

Bovine viral diarrhoea virus (BVDV), an enveloped, single-stranded, positive-sense RNA virus of the *Flaviviridae* family, is a globally distributed bovine pathogen. BVDV infection in cattle, characterized by having a wide range of clinical manifestations, is invariably responsible for significant economic losses. To counteract these losses, various schemes to control and eradicate BVDV have been implemented, although safe drugs effectively inhibiting the replication of the virus are still lacking. The purpose of this study was to characterize the antiviral effect of naturally occurring proteins and peptides such as bovine lactoferrin, chicken egg lysozyme, and nisin from *Lactococcus lactis*, used both individually and in combination, against the cytopathic NADL strain of BVDV in vitro. After determining the cytotoxicity level of each protein or peptide to MDBK cells, its antiviral effect was evaluated using virucidal, cytopathic effect inhibition and viral yield reduction assays. In addition, the influence of the tested compounds on the intracellular viral RNA level was determined.

#### Results

The highest efficacy among the single treatments was achieved by bovine lactoferrin, which w