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Short Communication

Milk Lactoferrin: A Future Biomolecule for Livestock Species

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Lactoferrin, a pleiotropic and multivalent natural protein, derived from milk of livestock species, has become the center of attention in current scientific era due to its diverse biological activities and functions. It is an 80kDa single chain glycoprotein containing two lobes N-lobe and C-lobe, packed together with the hydrophobic connections with iron binding sites. Lactoferrin can be derived from multiple sources however it has found in higher quantities in milk of livestock animals especially bovine and camel. In bovine milk, it varies from 1.5 to 485.3 µg/mL [1] but colostrum has higher amount about 1-5 mg/mL [2] and lactoferrin concentration in camel milk is reported from 0.02 to 7.28 mg/mL [3]. The major purpose of milk-derived lactoferrin is because of its cost-effective acquisition and it has been found that animal milk derived lactoferrin showed more activity and therapeutic potential than human lactoferrin.

Lactoferrin has shown to possess multiple biological activities including anti-inflammatory, anti-cancer, anti-microbial and are also involved in immunomodulation. Recently, the milk lactoferrin has also been proposed to be evaluated against novel coronavirus disease (COVID-19) because of its potential to bind to multiple cellular receptors and to neutralize different strains of SARS virus [4,5]. Surprisingly, along with applications in human health and diseases, milk lactoferrin derived from livestock can be used for animal health development as well. The critical role that lactoferrin harbors related to the animal health has not yet been very well discovered and needs further focus as it has been implicated as a probable therapeutic remedial miracle in a wide array of animal health issues. For example, lactoferrin has been applied to decrease the culling and death rate of calves that suffer from diarrhea [6]. Another study also showed that the low dose of lactoferrin administration was having beneficial effect in calves that had diarrhea [7]. All these studies have steered the need of future research in this direction for beneficial outcomes in the field of animal health which may boost the production of livestock products for better food security.

The purpose of this issue is to receive recent research evaluating the potential of milk lactoferrin against different diseases of livestock to ensure maximum production of livestock products. We are hopeful that collection of articles in this domain will catch the attention of different scientists to further explore the pharmacological role of milk lactoferrin for healthy livestock in future.

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