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Immunoglobulins



New scientific review on Immunoglobulins

FrieslandCampina, in collaboration with Utrecht University, Wageningen University & Research, and Imperial College London, has published a scientific review highlighting the effects of bovine immunoglobulins on the human immune system. It gives an in-depth overview of sources of bovine Ig and in vivo studies on the effect of bovine Ig on allergy and infection. Potential mechanisms of action are discussed. The review concludes that inclusion of oral bovine immunoglobulins in infant nutrition may be a promising approach to support the immune function of infants.



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References

Effects of Bovine Immunoglobulins on Immune Function, Allergy, and Infection, L.H. Ulfman et al., *Frontiers in Nutrition*, volume 5, June 2018, pages 1-20, <https://doi.org/10.3389/fnut.2018.00052>

Effects of Bovine Immunoglobulins on Immune Function, Allergy, and Infection

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This review aims to provide an in depth overview of the current knowledge of the effects of bovine immunoglobulins on the human immune system. The stability and functional effects of orally ingested bovine immunoglobulins in milk products are described and potential mechanisms of action are discussed. Orally ingested bovine IgG (bovine IgG) can be recovered from feces, ranging from very low levels up to 50% of the ingested IgG that has passed through the gastrointestinal tract. In infants the recovered levels are higher than in adults most likely due to differences in stomach and intestinal conditions such as pH. This indicates that bovine IgG can be functionally active throughout the gastrointestinal tract. Indeed, a large number of studies in infants and adults have shown that bovine IgG (or colostrum as a rich source thereof) can prevent gastrointestinal tract infections, upper respiratory tract infections, and LPS-induced inflammation. These studies vary considerably in target group, design, source of bovine IgG, dosage, and endpoints measured making it hard to draw general

conclusions on effectiveness of bovine immunoglobulin rich preparations. Typical sources of bovine IgG used in human studies are serum-derived IgG, colostrum, colostrum-derived IgG, or milk-derived immunoglobulins. In addition, many studies have used IgG from vaccinated cows, but studies using IgG from nonimmunized animals have also been reported to be effective. Mechanistically, bovine IgG binds to many human pathogens and allergens, can neutralize experimental infection of human cells, and limits gastrointestinal inflammation. Furthermore, bovine IgG binds to human Fc receptors which, enhances phagocytosis, killing of bacteria and antigen presentation and bovine IgG supports gastrointestinal barrier function in in vitro models. These mechanisms are becoming more and more established and explain why bovine IgG can have immunological effects in vivo. The inclusion of oral bovine immunoglobulins in specialized dairy products and infant nutrition may therefore be a promising approach to support immune function in vulnerable groups such as infants, children, elderly and immunocompromised patients.



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