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Immunomodulation: Exploiting the innate immune system to control disease

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The immune system is generally classified into two separate subsystems; the adaptive or specific system and the innate or non-specific system. Components of the innate system include macrophages, natural killer cells, mast cells and diverse humoral factors or cytokines (e.g. interleukins, interferons, tumor necrosis factor). The innate system is the primary target for immunomodulation using two different approaches; direct administration of a cytokine or administration of an agent designed to stimulate multiple components of the system. Exploiting this segment of the immune system can provide prophylaxis and/or treatment for a range of diseases via short-term induction of various cellular and humoral components. There are a number of immunomodulatory products available for veterinary use with active ingredients such as feline interferon omega, human interferon alpha, Parapox ovis virus (ZYLEXIS, dogs, cats, horses, cattle, swine), Mycobacterium cell wall fraction, Propionibacterium acnes and linked mannann polymers. Although label indications refer to specific diseases, based on the generalized impact on the immune system and the lack of reported adverse events, use is commonly extended to non-label indications such as the prevention/reduction of the infectious sequelae of weaning and transportation, and as an adjunct to stressful treatments such as chemotherapy.
