

# Opsonizing Antibodies to Virulence Factors of *Pasteurella haemolytica*

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Opsonization of *Pasteurella haemolytica* by whole serum has been documented. However, the role of antibodies to specific antigens has not been investigated. This study was performed to examine the phagocytosis of *P haemolytica* by antibodies to specific virulence mechanisms. Antibodies were produced in rabbits to capsular polysaccharide, LPS, leukotoxin, capsular extracts, and spheroblasts. These antibodies were used to opsonize H<sup>3</sup>-thymidine labelled *P haemolytica* for bovine peripheral blood polymorphonuclear cells (PMNs). Results showed that antibodies to each antigen preparation except capsular polysaccharide opsonized bacteria cultured to the stationary phase of growth better than bacteria cultured to

the logarithmic phase of growth. The combination of antibodies to capsular polysaccharide, LPS, and leukotoxin opsonized bacteria cultured to the logarithmic phase of growth better than each antibody alone. These results indicate that the presence of leukotoxin neutralizing antibodies does not improve opsonization of *P haemolytica* by antibodies to other virulence factors although phagocytosis was achieved by antibodies to virulence factors (LPS, capsular polysaccharide, and leukotoxin) as well as by antibodies to surface antigens. These results suggest the need for future studies to evaluate the role of these antibodies on the functional capacities of the PMNs once bacteria have been phagocytosed.

## Effect of Alkaloids Produced by *Acremonium coenophialum* in Fescue on Vascular Function in Cattle

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The purpose of our studies have been to evaluate the vasoconstrictive potential in cattle of alkaloids found in toxic fescue, using an isolated vessel model (lateral saphenous vein and dorsal metatarsal artery). The method used in our studies previously has been described (Solomons, Oliver, and Linnabary, Am. J. Vet. Res., 50:235-238, 1989). Vasoconstriction is a well documented clinical sign of cattle that ingest *Acremonium coenophialum*-infested fescue grass or hay. Vessels are constricted by alkaloids present in toxic fescue, such as N-acetyl loline, ergovaline, ergonovine and ergotamine. Using selective agonist

and antagonist drugs for adrenergic and serotonergic receptors, in the presence and absence of alkaloids found in fescue, the biogenic amine receptors affected by the alkaloids can be determined. This information can then be used to develop appropriate alleviator drugs to diminish the toxic effects of the alkaloids present in fescue forage. The effects of N-acetyl loline and ergotamine on adrenergic and serotonergic receptors will be described, as will the influence of potential alleviator drugs such as thiabendazole and phenothiazine. Examples of data to be presented are shown below.