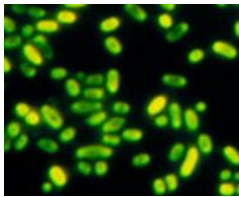


Pasteurella Multocida Vaccine Antibodies and ELISA Kits

Pasteurella multocida is a pathogenic gram-negative nonmotile, penicillin-sensitive coccobacillus belonging to the Pasteurellaceae family that has been classified into three subspecies, five capsular serogroups and 16 serotypes. *P. multocida* is the cause of a range of **diseases in mammals and birds, including fowl cholera in poultry, atrophic rhinitis in pigs, and bovine hemorrhagic septicemia in cattle and buffalo**. Infection with *Pasteurella multocida* is a significant cause of clinical disease in rabbits. Snuffles, a highly contagious **pasteurellosis** of rabbits primarily affects the upper respiratory tract with potential fatal consequences, such as septicemia, pneumonia, chronic rhinitis, and otitis media as well as multiple abscesses. Rabbits often get colonized with *P. multocida* for long durations without clinical signs, and the prevalence of *P. multocida* in clinically healthy animals had been estimated to range from 20% to 90% depending on the detection method employed. Snuffles is also caused by either serotype A or D or serotype F strains. *P. multocida* can also cause a zoonotic infection in humans, which typically is a result of bites or scratches from domestic pets. Many mammals (including domestic cats and dogs) and birds harbor it as part of their normal respiratory microbiota.



Many *P. multocida* strains express a polysaccharide capsule on their surface, and isolates can be differentiated serologically by capsular antigens into serogroups A, B, D, E, and F. *Pasteurella multocida* serogroup A isolates are bovine nasopharyngeal commensals, bovine pathogens and common isolates from bovine respiratory disease (BRD), both

enzootic calf pneumonia of young dairy calves and shipping fever of weaned, stressed beef cattle. The disease caused by the organism is generally dependent on capsular type, since **serogroups B and E** cause hemorrhagic septicemia in **cattle and buffalo**, **serogroup A** causes fowl cholera in **poultry**, and serogroup D causes atrophic rhinitis in **pigs**. *P. multocida* A3 is the most common serotype isolated from BRD, and these isolates have limited heterogeneity based on outer membrane protein (OMP) profiles and ribotyping.



Two bacteria, *Mannheimia haemolytica* (of *Pasteurella haemolytica*) and *Pasteurella multocida*, are often associated with BRD or shipping fever in cattle and are often referred to as secondary bacterial invaders. *Mannheimia haemolytica*, the bacteria most frequently isolated from pneumonic lungs in cattle, and *Pasteurella multocida* often compound respiratory disease initiated by other pathogens (viruses, bacteria, mycoplasma). Respiratory tract infections (pneumonia) due to these two bacteria occur when

the organism is inhaled. Under conditions of impaired pulmonary defenses, a severe necrotizing fibrinous pleuropneumonia develops. Spread of these organisms is by direct contact, or by ingestion of feed and water contaminated by nasal and oral discharges from infected

cattle. Therefore these two bacteria are easily spread between cattle, especially when calves are crowded (as in shipment) or closely confined (as in a dairy calf nursery). The first clinical signs observed in calves affected by either bacterium are vague and often limited to a slight depression and lack of interest in eating, high temperature (up to 107°F), and labored breathing. If the disease process is not stopped, the lungs become irreversibly damaged, the body temperature drops to below normal and the animal usually dies. Pneumonia associated with either *M. haemolytica*, or *P. multocida* can develop and progress very rapidly and requires biosecurity by minimizing exposure to diseased and unfamiliar cattle.

***P. multocida* genome** shows 129 lipo-proteins that are secreted and located in the outer membrane. **Protein H (37.5 kda, serogroup D)** has been found to be the major polypeptide in the outer membrane of the *P. multocida*. This bacteria has a capsule and lipopolysaccharides. The capsule helps to avoid phagocytosis. **Lipopolysaccharides** are important for survival of the bacteria in the host. The ***P. multocida* toxin (PMT, 146 kda, serogroups A and D)** has surface adhesins and iron acquisition proteins for attachment and invasion of host cells and to survive in a hostile environment. Type IV fimbrial subunit protein (**Ptfa, ~31 kda, serogroups A, B, D, and F**) is being explored as a vaccine candidate especially for HS in bovines and septicaemic pasteurellosis in sheep and goat. A highly conserved outer membrane protein, **Vacj ~26 kda**, may serve as 'signature protein' in developing diagnostic assay or as a recombinant subunit vaccine for *P. multocida* infections in livestock.

PMT Vaccines: Live bacterial cultures vaccination should be done 3 weeks prior to shipping calves to a feedlot and in dairy cows, vaccination of the dam prior to calving can help increase antibodies within the colostrum. **A recombinant subunit (outer membrane protein) H vaccine** for *P. multocida* has also been developed.

ADI is developing and testing several **recombinant *P. multocida* antigenic proteins (PMT, Vacj, Ptfa and whole PMT extracts)** that will provide better protection than current vaccines. ELISA kits to detect antibodies to several *P. Multocida* antigens are available to facilitate research.

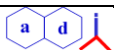
Our ELISA kits offers the following advantages:

- Convenience:** ELISA kit contains all necessary reagents. Tests are conducted at room temp. for convenience.
- Speed:** Test results obtained in 1-2 hrs, fastest in industry.
- Economy:** Recombivirus ELISA platform employ highly purified recombinant proteins so there is no need to test sample in control viral extracts (50% savings in cost, samples, and time).
- Safety:** Recombinant antigen uses for ELISA; NO live or dead virus or viral derived proteins. No safety issues.
- Highthroughput:** ELISA kits are available in standard 96-wells strip plates (8 well strips x12) or 5x96 tests for high throughput testing. Saves, samples, labor and cost.

List of *P. multocida* ELISA Kits available from ADI.

Items Description	Species	96 tests Cat#
Pasteurella multocida (whole antigens) antibody ELISA kits	Rabbit	AE-310800-1
	Chicken	AE-310805-1
	Bovine	AE-310810-1
	Pig	AE-310815-1
	Mouse/Rat	AE-310820-1
	Human	AE-310825-1
	Monkey	AE-310830-1

Note: All antibodies and ELISA kits are for Research use only. Some of the products may not be available in the USA. Contact ADI for details.



P. multocida Antibodies, proteins and controls

Catalog#	ProdDescription	ProductType
AE-310800-01N	Rabbit Anti-Pasteurella multocida antigens IgG -ve serum	Animal Disease serum, P. multocida
AE-310800-02P	Rabbit Anti-Pasteurella multocida antigens IgG +ve serum	Animal Disease serum, P. multocida
AE-310810-05N	Bovine Anti-Pasteurella multocida antigens IgG -ve serum	Animal Disease serum, P. multocida
AE-310810-06P	Bovine Anti-Pasteurella multocida antigens IgG +ve serum	Animal Disease serum, P. multocida
AE-310815-07N	Porcine/Swine Anti-Pasteurella multocida antigens IgG -ve serum	Animal Disease serum, P. multocida
AE-310815-08P	Porcine/Swine Pasteurella multocida antigens IgG +ve serum	Animal Disease serum, P. multocida
AE-310850-01N	Rabbit Anti-Anti-Pasteurella multocida Type IV fimbrial subunit protein (PTFA) IgG -ve serum	Animal Disease serum, P. multocida
AE-310850-02P	Rabbit Anti-Anti-Pasteurella multocida Type IV fimbrial subunit protein (PTFA) IgG +ve serum	Animal Disease serum, P. multocida
AE-310850-05N	Bovine Anti-Anti-Pasteurella multocida Type IV fimbrial subunit protein (PTFA) IgG -ve serum	Animal Disease serum, P. multocida
AE-310850-06P	Bovine Anti-Anti-Pasteurella multocida Type IV fimbrial subunit protein (PTFA) IgG +ve serum	Animal Disease serum, P. multocida
AE-310850-07N	Porcine/Swine Anti- Anti-Pasteurella multocida Type IV fimbrial subunit protein (PTFA) IgG -ve serum	Animal Disease serum, P. multocida
AE-310850-08P	Porcine/Swine Anti-Pasteurella multocida Type IV fimbrial subunit protein (PTFA) IgG +ve serum	Animal Disease serum, P. multocida
AE-310900-01N	Rabbit Anti-Pasteurella multocida VacJ Protein IgG -ve serum	Animal Disease serum, P. multocida
AE-310900-02P	Rabbit Anti-Pasteurella multocida VacJ Protein IgG +ve serum	Animal Disease serum, P. multocida
AE-310900-05N	Bovine Anti-Pasteurella multocida VacJ Protein IgG -ve serum	Animal Disease serum, P. multocida
AE-310900-06P	Bovine Anti-Pasteurella multocida VacJ Protein IgG +ve serum	Animal Disease serum, P. multocida
AE-310900-07N	Porcine/Swine Anti-Pasteurella multocida VacJ Protein IgG -ve serum	Animal Disease serum, P. multocida
AE-310900-08P	Porcine/Swine Anti-Pasteurella multocida VacJ Protein IgG +ve serum	Animal Disease serum, P. multocida
AE-310950-01N	Rabbit Anti-Pasteurella multocida toxin IgG -ve serum	Animal Disease serum, P. multocida, P. multocida
AE-310950-02P	Rabbit Anti-Pasteurella multocida toxin IgG +ve serum	Animal Disease serum, P. multocida
AE-310955-03N	Chicken Anti-Pasteurella multocida toxin IgG -ve serum	Animal Disease serum, P. multocida
AE-310955-04P	Chicken Anti-Pasteurella multocida toxin IgG +ve serum	Animal Disease serum, P. multocida
AE-310960-05N	Bovine Anti- Pasteurella multocida toxin IgG -ve serum	Animal Disease serum, P. multocida
AE-310960-06P	Bovine Anti-Pasteurella multocida toxin IgG +ve serum	Animal Disease serum, P. multocida
AE-310965-07N	Porcine/Swine Anti-Pasteurella multocida toxin IgG -ve serum	Animal Disease serum, P. multocida
AE-310965-08P	Porcine/Swine Anti-Pasteurella multocida toxin IgG +ve serum	Animal Disease serum, P. multocida
PMT11-C	Recombinant Purified Anti-Pasteurella multocida toxin (PMT) control for western blot	Western Control
PMT11-S	Anti-Pasteurella multocida toxin (PMT) antiserum	Antibodies
PMT15-N-10	Purified Pasteurella multocida Toxin (146 kda)	Rec. Protein
PMT15-N-10	Purified Anti-Pasteurella multocida Toxin (PMT, 146 kda, >95%)	Rec. Protein
PMUL11-S	Anti-Pasteurella multocida antigens antiserum	Antiserum
PTFA11-A	Anti-Pasteurella multocida Type IV fimbrial subunit protein (PTFA) Peptide IgG, aff pure	Antibody
PTFA16-P	Anti-Pasteurella multocida Type IV fimbrial subunit protein (PTFA) control peptide	Peptide
VACJ11-C	Recombinant (E. coli) Anti-Pasteurella multocida virulence associated chromosome locus J (Vacj) protein control for western blot	Western Control
VacJ11-S	Anti-Pasteurella multocida virulence associated chromosome locus J (Vacj) protein antiserum	Antibody
VacJ15-R-10	Recombinant Anti-Pasteurella multocida outer membrane lipoprotein	Pure Protein

Pasteurella-multocida-ELISA-Flr

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