

# [Mycoplasma to pass through bacterial membrane filters](https://assignbuster.com/mycoplasma-to-pass-through-bacterial-membrane-filters/)

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MYCOPLASMAINTRODUCTION?  Mycoplasma coming under the classMollicutes. There are  9 genera in theclass Mollicutes. Thus  class Mollicuteshave  3 families are Mycoplasmataceae, Acholeplasmataceae, Anaeroplasamataceae .

From that 9 genera , 5 are  veterinary importance (Mycoplasma, Ureaplasma, Acholeplasma, Anaerplasma, Asteroplasma) . There are  100 spp in the Mycoplasma genus  . First Mycoplasma identified in 1890 was Mycoplasmamycoides subsp mycoides . Similar types of Mycoplasmas were subsequently identified  called as Pleuro Pneumonia LikeOrganisms (PPLO) ?  Generally Mycoplasma are Prokaryotes, have capable of replication. Pleomorphic organisms which will appear as  spherical , filaments . They do not have cellwall so they  cannot synthesizes peptidoglycan. However  they have 3 layered flexible  outer membranewhich will causes the flexibility property of that organism .

Flexibility : Allows to pass through bacterialmembrane filters (0. 22 to 0. 45µ) .

Sensitive to heat , dessication, detergents but they resistant to penicillinHABITAT: -Found onmucosal surfaces of conjunctiva , nasal cavity, oro-pharynx , intestinal, genital tract . these are extracellular organisms. Generally host specific in naturePATHOGENESIS: -Parasiticmycoplasms tend to adhere firmly  to host’ s mucous membrane (adhesin) .

There they produce haemolysins, proteases, nucleases, other lethal factors  that leads to  death of cells. Some mycoplasmal organisms  have predilection site in mesenchymal cells -joints, serous cavities. Respiratorytract and lungs –  frequent site of thepathogenic organisms . It destroys  the cilia of respiratorytract thereby causes  2° bacterialinvasion .

Latency can occur in that microbial pathogenecity . Stress , intercurrent infection & agepredisposes the disease . Infections may be chronic or low grade andthey are exogenous or endogenousLABORATORY DIAGNOSIS: -Specimens:?  Samples are fragile in nature  , it should be  kept at refrigerated  condition and delivered to a laboratory within24 – 48 hours of collection . Samples : Mucosalscrapings, tracheal exudates,  aspirates, pneumonic tissue from the edge of lesionCavity or joint fluids, mastitis milkIsolation : -Culturemedia: Mycoplasma are fastidious organisms, facultative anaerobes,  5-10% CO?. It requires enriched media forgrowth  . Basic medium is a goodquality beef infusion with supplements pH of the medium – 7.

2 to 7. 8. Commercially available agar or broth(supplemented with horse serum 20% and yeast extract with amino acid).

Penicillin– inhibition of gram +ve Thallous acetate- inhibition of gram –ve , fungi. Specimenshould be inoculated into 2 broths and onto (2 agar plates 1 for mycoplasm, 1for urea plasm). Fluid material (fetal fluids , exudates)- directly inoculatedinto broth and agar mediumSome specimens (semen, joint fluids, tissues) containinhibitors of mycoplasmsBoth undiluted specimen & ten fold dilutions inmycoplasmal broth should be culturedIDENTIFICATION: -Differentiation  from bacterial L forms ????  Bacteria  temporarily failed to form cell walls (Lforms) can produce microcolonies similar to the mycoplasms . Staining microcolonies with Diene ‘ sstain – aids in differentiation between L and mycoplasmal colonies . Mycoplasmal colonies retain stain Lform decolorise within 15 mins COLONIAL MORPHOLOGY: -Microscopically:?  Fried egg colonies?  Diene ‘ s stain – recognizesmicrocolonies ?  Inoculated agar plates placed in ahumid atm. at 37°C?  umbonate micro colonies when illuminated obliquely?  Microcolonies – fried eggappearanceIDENTIFICATION OF THE GENUS: -Sensitivityto digitonin ????  Mycoplasma and urea plasma aresensitive to digitonin?  Done by digitonin disc applied onthe agar media ?  Positive – Zone of inhibition shouldbe 5 mm or moreIDENTIFICATION OF SPECIES: -Fluorescentantibody staining:?  To identify M. dispar and Urea plasm- bronchial epithelium of calves FA (directand indirect) for staining mycoplasmal colonies : q  For recognizing mixed culturesq  commonly used in avian mycoplasms?  Enzyme linked immunoperoxidase:?  Porcine bronchial epithelium –M. hyopneumoniae ?  AGID- Using known antisera   to detect mycoplasmal ag ?  ELISA – ag identification with knownantisera ?  Species specific DNA probes are available?  Biochemical tests ?     glucose fermentation , argininehydrolysis , phosphatase activitySEROLOGICALTEST  Antibioticssusceptibility:?  Although it develop resistant toantimicrobial drugs?  So ABST not usually performed?  Tylosin, tetracyclin, tiamulin, fluroquinolones used for treatment ?  Specific pathogen free (SPF )programmes ?  Established for poultry and pigherds?  2 phases in these programmes ????  Detection of infections and cullingor isolation of affected animals?  Followed by serological monitoringof the flocks to demonstrate continued freedom from infection    CBPP?  CHARACTERISTIC STANCE – Head, neck, extended and elbow abductedPostmortem lesions ????  Lungs – marbled appearance?  Grey , red consolidated lobulesalternate irregularly with pink emphysematous lobules?  Chronic : fibrinous encapsulation of necrotic foci(viable mycoplasms)?  Break down of capsules is major factor in the persistenceand spread of CBPP?  Joints – fibrin in synovial space& articular cartilage erosion CCPP: -?  Highly contagious?  incubation  period : 6-10 days  ?  Transmission ????  Direct contact?  Carrier animal may exist?  PM lesions ????  Granular lung appearanceFibrinouspneumonia CRD: -?  Highly versatile and successfulpathogen?  Once infected, it remains for life?  Transmission ????  Vertical transmission?  Economically  significant disease ?  PM lesions:?  sinusitis, conjunctivitis, tracheitiswith excessive mucous , air sacculitis , pneumonia , synovitis, osteomyelitis