

## Mouse Hepatitis Virus

### Prevalence

Very common. Second most common agent detected by serology in Australian mouse colonies. Does not infect rats.

### Diagnosis

Serology, lesions, RT-PCR

### Disease

Epizootic – High mortality among neonates to subclinical in adults.

Enzootic – Usually subclinical in all ages.

Wasting syndrome in nu/nu mice (possibly SCID's as well) over an 8 – 10 week period.

### Strains

Many strains (25 described) which are indistinguishable antigenically. Spectrum of tissue tropisms ranging from respiratory with colonisation of nasal epithelium (minimal lesions apparent) with dissemination possible to liver, lymphoid tissues etc in susceptible hosts (focal necrosis with syncytia) to enteric where virus is largely restricted to bowel mucosa with ascending colon and caecum major target areas. Enteric disease appears to be age dependant with infant mice developing enteritis and adult mice remaining subclinical. Immunosuppression or co-infection with other pathogens can increase susceptibility to MHV during active infection.

### Transmission

Orofaecal, fomites, aerosol. Extremely contagious. In utero transmission has been demonstrated under extreme experimental conditions but is not considered to play a part in natural infection. Known to be a contaminant of transplantable tumours.

### Duration

Acute in immunocompetent mice. Virus shedding 2-3 week period, longer in immunocompromised animals. Lesions may only be apparent for 7-10 days.

### Durability

#### RESISTANT TO

- repeated freeze/thawing
- heating (56°C for 30 mins)
- acid pH

#### SENSITIVE TO

- lipid solvents
- drying and disinfectants

Survives 30 days at 4°C and indefinitely at –70°C

IMVS Veterinary Services Division



**phone** +61 8 8261 1033 **fax** +61 8 8261 2280 **e-mail** [vet.services@imvs.sa.gov.au](mailto:vet.services@imvs.sa.gov.au)



\*The IMVS makes no express or implied warranties in respect of the Supply except where this would contravene any statute or where the exclusion of an express or implied term, condition or warranty would be void (collectively, "Non-excludable Warranty"). However, where exclusion of express or implied warranties does not constitute a Non-excludable Warranty, IMVS excludes all warranties, terms and conditions and all liability to the Client for consequential or indirect loss or damages. In any event, in respect of both Non-excludable Warranties and excludable warranties, the IMVS' liability arising from anything under this Supply is limited, at the IMVS' election, to an amount equal to the payment received from the Client for the Supply or the repeat provision of the Supply.\*

# Mouse Hepatitis Virus

---

IMVS 1409/B Page 2/2

## Comment

Coronavirus (RNA). Immunity to MHV is virus strain specific and short lived. Coronaviruses readily mutate and recombine, with evolution of new strains and repeated infection being features of enzootic infection.

## Significance

High. An extremely large number of effects of MHV on mice and their biologic responses to experimental treatments have been observed.

## Control

Pathogen exclusion. Regular health monitoring of supplier sub-populations, transport in filter boxes, quarantine at receiving institution with serology testing 2 weeks post arrival. Maintenance under strict barrier protocol. Screening of transplantable tumours and other murine derived biological material prior to experimental use

## Post infection

Caesarean rederivation, embryo transfer or burn out selecting seronegative progeny as breeding stock post isolation (recommendations vary from 3 – 12 weeks) of individual breeding pairs in micro-isolators. Burn out is usually only successful if population is immunocompetent and may not be effective with transgenic or knockout lines where immune status has not been fully characterised. Strict husbandry protocols and efficient barrier conditions are essential for success.

## Further reading

'Infectious diseases of Mice and Rats' – National Academy Press: ISBN 0-309-03794-8.



IMVS Veterinary Services Division

**phone** +61 8 8261 1033 **fax** +61 8 8261 2280 **e-mail** [vet.services@imvs.sa.gov.au](mailto:vet.services@imvs.sa.gov.au)



\*The IMVS makes no express or implied warranties in respect of the Supply except where this would contravene any statute or where the exclusion of an express or implied term, condition or warranty would be void (collectively, "Non-excludable Warranty"). However, where exclusion of express or implied warranties does not constitute a Non-excludable Warranty, IMVS excludes all warranties, terms and conditions and all liability to the Client for consequential or indirect loss or damages. In any event, in respect of both Non-excludable Warranties and excludable warranties, the IMVS' liability arising from anything under this Supply is limited, at the IMVS' election, to an amount equal to the payment received from the Client for the Supply or the repeat provision of the Supply.\*