

MKPV

Mouse Kidney Parvovirus (MKPV) • Q&A

IDEXX BioAnalytics

Q MKPV– what is it and why is it important?

A Mouse Kidney Parvovirus (MKPV), also known as Murine Chapparravirus (MuCPV), is a novel, pathogenic murine virus within the family *Parvoviridae* and is genetically divergent from other common parvoviruses of mice (MPV, MVM). MKPV has a prevalence rate of 9%* in research mouse colonies.

Q What animals can become infected?

A Immunocompromised and immunocompetent mice can be infected with MKPV and both have been shown to develop renal lesions.

- Immunocompromised mice develop severe chronic disease with alterations in BUN and creatinine, and anemia which can result in death.
- Immunocompetent mice develop chronic, subclinical infections.

Q How is MKPV transmitted?

A MKPV is thought to infect mice by a fecal-oral route. Biological materials that passage into mice can also transmit the virus. This is due to the harvesting of material during the viremic phase. The prevalence in biological materials is 4%.*

Q MKPV– why should I test for this virus?

A

- MKPV is a pathogenic virus that causes renal lesions in both immunocompetent and immunodeficient mice.
- MKPV can cause severe renal disease in immunodeficient mice and can result in death.
- Prolonged viral shedding in both immunodeficient and immunocompromised mice poses an increased risk to other mice in the vivarium.

Pathogen screening is an essential management tool in any situation that requires an assessment of microbiological risks. Screening goals differ based on the scenario. For example, screening biological materials and quarantine can protect the vivarium from an outbreak; while including MKPV as a part of routine animal health monitoring can detect pathogens in undetected infections that may exist before they spread further.

Q What are the IDEXX BioAnalytics MKPV testing recommendations?

A MKPV testing can easily be incorporated into existing or new health monitoring programs. Testing strategies to consider are:

- **Routine animal health monitoring** – especially if housing immunodeficient or immunocompromised animals.
- **Quarantine animals** – including animals from commercial vendors that may not have included previous MKPV testing.
- **Biological materials** – especially materials that have been previously passaged in mice, including archived material that has not previously been tested for MKPV.

Q Does the biology of the virus impact the choice of test?

A Due to prolonged shedding and delayed antibody seroconversion, older colony animals or dirty bedding sentinels kept for more than one testing period are optimal animals to test.

Q What are testing options for MKPV?

A In addition to our existing PCR test, we've developed a serological assay and both methodologies have over 99% sensitivity and specificity.*

Q When should I use MKPV serology vs PCR-based testing?

A Serology is based on the detection of antibodies and provides additional information beyond that of PCR results. While active shedding in animals might progressively decline over time and cause a negative PCR test result, antibodies are very stable and persistent, making serology a good test choice for screening animals potentially exposed to a disease in a previous period of their life.

In summary, PCR is best for detecting an animal that is infected and carries the agent. Serology works best for an animal that has been infected and might not be anymore.

Q Why isn't MKPV serology included in IBA standard serological profiles?
(must be requested as single agent or add-on)

A Seroconversion for this virus is delayed to over 100 days post exposure. Serology testing needs to be limited to animals that have been possibly exposed for more than 3 months to an infection.

Adding MKPV to a standard existing profile could generate a false sense of security, derived from testing animals that have not been exposed to the virus long enough.

Q What biological screening profiles will include MKPV?

A MKPV has been added to IMPACT I and IMPACT VIII and are our comprehensive profiles for biological screening of mice (also rats for IMPACT VIII). IMPACT I and IMPACT VIII offer the largest screening capabilities for pathogens in biological materials.

The test can be ordered as a single agent or as an add on to other IMPACT profiles.

Q What are the IBA MKPV testing options?

A **Animal Health Monitoring and Quarantine PCR**

MKPV is also included in the following profiles:

- Mouse Global Radil Advantage
- Global Opti-Xpress/EDx profiles
- Mouse Parvovirus Plus profiles
- Single agent can be selected or added to any existing profile

Serology

- Single agent can be selected or added to any existing profile

Biological Materials Screening

PCR

MKPV is included in the following profiles:

- IMPACT I (mouse)
- IMPACT VIII (mouse+rat)
- Single agent can be selected or added to any existing profile

Q Which sample types are recommended for my screening needs?

A **Animal Health Monitoring**

We recommend the following sample types:

PCR

- Feces of colony and/or sentinel animals
- Environmental rack or cage samples

Serology

- Opti-Spot (from long-exposed animals)

Quarantine

PCR

- Feces (can be pooled)

Biological Materials

PCR

- Cells, cell culture or liquid sample
- Tissue or solid tumor stocks
- Antibody samples