

March 28, 2007

Potential LDV Contamination of Commercially Produced Extracellular Matrix Material

Charles River Laboratories Research Animal Diagnostic Services has received several customer inquiries regarding the recent COMPED discussion on the **LDV contamination of an extracellular matrix product derived from mouse tumor cells**. Our Infectious Disease PCR Laboratory has observed an increased number of product samples received for LDV testing and has, in some cases, found template positive samples using TaqMan[®] LDV PCR. Charles River has also confirmed infectivity by traditional Mouse Antibody Production (MAP) Testing. Results from our *In Vivo* MAP test have yielded both elevated LDH enzyme levels and PCR positive results at high template copy levels.

Q. What is LDV?

A. Lactate dehydrogenase-elevating virus (LDV) is an enveloped virus in the arterivirus group that only infects mice, in which it causes persistent infection. However, infectivity in feces is lost within 24 hours. In addition, the virus is highly sensitive to inactivation by detergents or disinfectants. An excellent recent review of LDV is found in Chapter 8, Lactate dehydrogenase-elevating virus (LDV), in *The Mouse in Biomedical Research, Vol. 2, 2007*, by Coutelier, J.P. and Brinson, M.A.

Q. Why is it important?

A. Although typically subclinical in immunocompetent mice, LDV does cause elevation of multiple serum enzymes, including lactate dehydrogenase (LDH). Infection induces increases in circulating interferons and several interleukins. It also has been reported to have significant impacts on the immune system. In addition, some LDV strains have been reported to cause polioencephalomyelitis in AKR and C58 mice under certain conditions.

Q. Can LDV spread throughout my colony mice?

A. Although LDV is shed in feces, urine, milk, and probably saliva, it does not transmit readily by co-housing mice, and even less readily, if at all, by soiled bedding. It is primarily spread transplacentally by infected mothers and by fighting, which breaches mucosal barriers. As a result, sentinel mice do not effectively monitor for LDV infection.

Q. Should I be testing for LDV as part of routine HM?

- A. Due to the general rarity of LDV in laboratory mice and the fact that it does not spread readily, many research facilities do not routinely test for LDV, provided that: they only use animals from LDV-free sources; wild and feral mice are excluded; and all cell lines and mouse-derived biologicals are tested prior to use. Nonetheless, periodic serum testing may provide additional assurance of a negative status, similar to common practice in testing for other rare viruses such as ectromelia.

Q. Can I screen my immunocompromised colonies for LDV?

- A. Yes. Our LDV serology assay tests LDH enzyme levels (not antibody) in serum samples. Samples from immunocompromised colonies can be screened via PCR, and our laboratory has determined this to be the most sensitive method for detecting viral RNA such as LDV.

How Charles River Laboratories can help:

Charles River offers multiple testing methods to screen cell cultures, supernatant, ascitic fluid, and purified antibodies for the presence of extraneous pathogens such as LDV. Clients have the option of submitting different sample types depending on contamination point. Serum samples can be submitted for serological analysis of LDH enzyme levels. Alternately, biological material can be submitted for TaqMan[®] PCR Testing.

If you would like to receive additional information on available LDV testing options, or would like to speak to a member of our professional staff concerning LDV and your current testing program, please contact our Technical Services Department at **1.800.338.9680**.