

In-vivo Biosafety Testing Services

In-vivo assays screen for agents not known to cause any cytopathic effects in cell culture and are required at various stages of biopharmaceutical manufacturing as defined by international regulatory guidelines.

Moredun Scientific offers a comprehensive portfolio of *in-vivo* biosafety testing services. Studies are conducted in our state of the art GLP-accredited animal facility.

- **In-vivo adventitious agent assays for the detection of viral contaminants:** The test article is inoculated into a range of animal species which increases the probability of virus detection. A combination of embryonated eggs, adult mice and suckling mice are generally used with guinea pigs, rabbits and other species included if appropriate. Animals are observed over a 28 day period for signs of ill health. These assays detect the presence of viral contaminants, but do not identify the nature of the contaminant. Any positive results would require further investigation.
- **Mouse, Hamster and Rat Antibody Production Tests for the detection and identification of adventitious rodent viruses:** Essential assays for rodent cell derived products. Virus antibody-free rodents are inoculated by multiple routes with the test sample and observed over a 28 day period. Serum samples are analysed (mainly by the ELISA technique) for the detection of antibodies to a panel of viruses, (Table 1). A positive test indicates that the test sample has been exposed to the virus.
- **General Safety Test for abnormal toxicity:** A survival study, the test article is inoculated into guinea pigs and mice which are observed for 7 days for clinical signs of illness. A pharmacopoeial requirement for vaccine development.
- **Tumorigenicity studies:** The test article is typically injected into nude mice, or other immunosuppressed rodents, which are monitored for signs of tumour formation. Tumorigenicity studies may be required for human epithelial cell lines, human cell lines used for live virus vaccine production and cells used in somatic cell or gene therapy.
- **Custom studies:** Please contact us to discuss your specific requirements.



Table 1: Viruses Detected in Rodent Antibody Production Tests

Virus	Abbreviation	Mouse Antibody Production Test	Hamster Antibody Production Test	Rat Antibody Production Test
Ectromelia	ECTRO	X		
Epizootic diarrhea of infant mice	EDIM	X		
Hantaan Virus	HANT	X		X
Kilham`s rat virus	KRV			X
Lactate dehydrogenase virus*	LDV	X		
Lymphocytic Choriomeningitis Virus**	LCM	X	X	X
Minute virus of mice	MVM	X		
Mouse adenovirus	MAV 1&2	X		X
Mouse cytomegalovirus	MCMV	X		
Mouse hepatitis virus	MHV	X		
Mouse pneumonitis virus	K	X		
Murine encephalomyelitis virus	Theilers,GDVII	X		X
Mouse thymic virus	MTLV	X		
Pneumonia virus of mice	PVM	X	X	X
Polyoma virus	POLY	X		
Reovirus type 3	REO	X	X	X
Sendai virus	SEND	X	X	X
Sialodacryoadenitis virus	SDAV			X
Simian virus 5	SV-5		X	
Toolan`s H-1 virus	H-1			X

* The presence or absence of LDV within a test sample is confirmed by measurement of serum levels of lactate dehydrogenase.

** The LCM antibody production assay can be supplemented with an intracranial challenge to test for the presence or absence of non-lethal strains of LCM virus.

Regulatory Guidelines

Guideline	Author
Q5A: 'Viral safety of biotechnology products derived from cell lines of human or animal origin'	International Conference on Harmonisation (ICH) 1998
Q5D 'Derivation and characterisation of cell substrates used for production of biotechnological/biological products'	International Conference on Harmonisation (ICH) 1997
Characterization and Qualification of Cell Substrates and Other Biological Starting Materials Used in the Production of Viral Vaccines for the Prevention and Treatment of Infectious Diseases.	US Food and Drug Administration and the Center for Biologics Evaluation and Research (FDA/CBER) 2006 – Draft
'Points to consider in the manufacture and testing of monoclonal antibody products for human use'.	US Food and Drug Administration and the Center for Biologics Evaluation and Research (FDA/CBER) 1997
'Points to consider in the characterization of cell lines used to produce biologicals.'	US Food and Drug Administration and the Center for Biologics Evaluation and Research (FDA/CBER) 1993
'Points to consider in the production and testing of new drugs and biologicals produced by Recombinant DNA technology'	US Food and Drug Administration and the Center for Biologics Evaluation and Research (FDA/CBER) 1985

Moredun Scientific Ltd has a strong commitment to animal welfare, all test animals have 24 hour veterinary cover to ensure optimal health and wellbeing.

Contact us

To further discuss our services please contact us:

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