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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 14926.64-2001

**Laboratory animals - Method for the examination of simian
poxvirus**

实验动物 猴痘病毒检测方法

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1 Scope

This standard specifies the methods and the reagents for the examination of simian poxvirus in laboratory animals.

It applies to the examination of monkeys for simian poxvirus, whether on entry into a facility, during routine health monitoring of the colony, or in the investigation of an outbreak.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this standard.

GB/T 14926.50 Laboratory animals - Serological methods · GB/T 14926.51 Laboratory animals - Methods for the examination of viral antigens

The reference to the two general method standards is the reason this document is short. The immunological techniques are specified once for the whole GB/T 14926 series, and this part states which of them apply to this virus, on which specimens, and how the result is read.

3 The examination

The examination proceeds along three routes, used together rather than in the alternative: detection of antibody in serum, detection of viral antigen, and identification of the virus itself in material taken from a lesion.

Serology establishes exposure and is the route used for screening a colony, since it needs

only blood and can be run on many animals at once. It does not distinguish a current infection from a past one, and in an orthopoxvirus it does not cleanly distinguish one member of the genus from another.

Antigen detection and identification from lesion material establish the presence of the virus, and are the routes used when an animal is showing the pox lesions the disease is named for. They require the animal to be handled at a point when it is infectious, which is why the standard carries its own biosafety provisions.

An orthopoxvirus in a colony that is no longer vaccinated

Simian poxvirus belongs to the same genus as smallpox and vaccinia, and cross-immunity within that genus is the fact that shaped the last fifty years of this problem. While smallpox vaccination was universal, the people who handled primates were incidentally protected against this virus too.

Vaccination stopped when smallpox was eradicated, and everyone who has entered animal work since is unprotected. A virus that was a manageable occupational hazard in 1975 is not one now, and the standard that governs its detection is doing more work than its length suggests.

In the colony itself the disease produces the characteristic pox lesions and can move through a group of housed animals quickly. Imported primates are the classic route by which it enters a facility, and from a facility a country, which is why this examination belongs to quarantine on arrival as much as to the routine monitoring of an established colony.

An orthopoxvirus, and zoonotic

Closely related to smallpox and to vaccinia. It transmits from animals to humans and, less efficiently, from human to human.

In a colony it produces a pox disease with characteristic lesions and spreads readily.

The population is no longer immune

Smallpox vaccination gave cross-protection against monkeypox. Vaccination ceased when smallpox was eradicated, and everyone born since is unprotected.

Which is why the disease has grown more prominent over the decades since, rather than less.

And imported primates are the route in

They are the classic way the virus enters a facility and, from there, a country - so this examination belongs to quarantine as much as to routine health monitoring.

What the method fixes

The sampling and the specimens; detection by antibody, by antigen or by identifying the virus from lesion material; the confirmation and the interpretation.

And the biosafety requirements for handling suspect material.

What a serological screen can and cannot settle

Antibody in serum says that an animal has met the virus. It does not say when, it does not say whether the animal is infectious now, and within the orthopoxviruses it does not cleanly say which member of the genus was met, because the cross-reactivity that once protected vaccinated handlers also blurs the serology.

For screening a colony this is enough and is the right instrument: it needs only blood, it can be run on many animals in one batch, and a negative result across a group is meaningful. For deciding what to do about one sick animal it is not enough, and the standard provides the other two routes for that.

Antigen detection and identification of the virus from lesion material answer the question serology leaves open. They are done on an animal that is showing lesions, which means on an animal that is shedding, and that is the point at which the handling itself becomes the hazard the biosafety provisions address.

Quarantine on arrival is where this examination earns its place

An established colony that has been screened and stays closed does not generate this infection on its own. It arrives, and it arrives with animals: imported primates are the route by which the virus enters a facility, and from a facility a country.

That places the examination in quarantine rather than in routine monitoring. An animal examined after it has joined the colony has already had the opportunity to transmit, and in housed primates that opportunity is measured in days. The value of the test is highest at the moment it is least convenient to run.

The GB/T 14926 series is built for exactly this: a common set of immunological methods, specified once, and a part for each agent that says which methods apply to it. The series is what allows a quarantine facility to run twenty examinations on one blood sample without twenty separate procedures.