Rabies in vitro potency test

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3Rs implementation in veterinary vaccine batch-release testing: Current state-of-the-art and future opportunities

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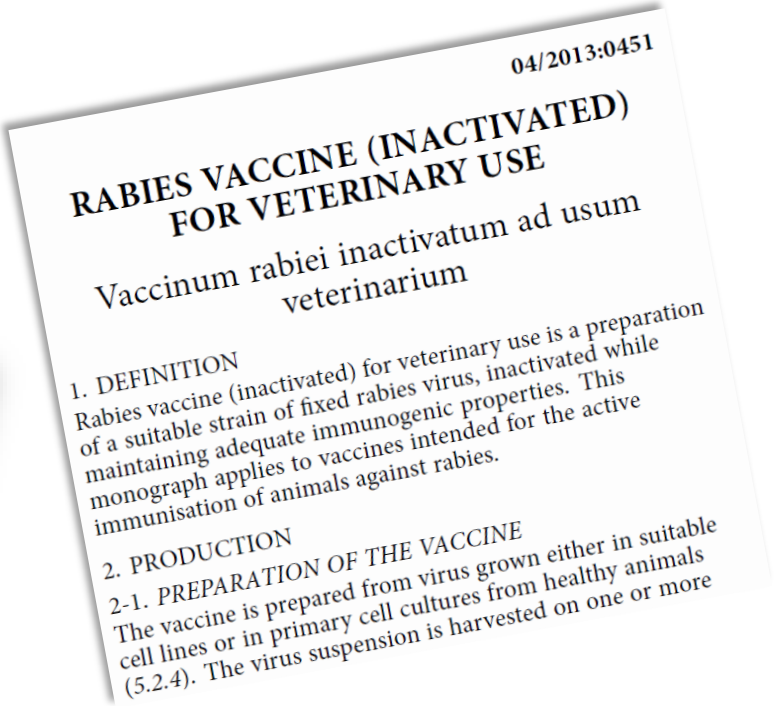
BACKGROUND

- The control of rabies inactivated vaccines for veterinary use has been implemented in Anses-Nancy since 1978 on all batches produced or imported in France before marketing.
- Anses-Nancy tests also batches of veterinary vaccines on request of international authorities.
- As a WHO CC and OMCL, we may be requested for testing new vaccine standards.
- Tests to be performed :
  - Appearance
  - Potency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RABIES VACCINE (INACTIVATED) FOR VETERINARY USE

Vaccinum rabiei inactivatum ad usum veterinarium

1. DEFINITION

Rabies vaccine (inactivated) for veterinary use is a preparation of a suitable strain of fixed rabies virus, inactivated while maintaining adequate immunogenic properties. This monograph applies to vaccines intended for the active immunisation of animals against rabies.

2. PRODUCTION

2-1. PREPARATION OF THE VACCINE

The vaccine is prepared from virus grown either in suitable cell lines or in primary cell cultures from healthy animals (5.2.4). The virus suspension is harvested on one or more

SOME DATA

- Vaccines received mainly from :
  - Boehringer Hingelheim (Rabisin, Eurican LR),
  - Virbac (Rabigen mono).
- All tested using the Serological Potency Assay. This test is recognized by PAHO (since 2021).
- Challenge test (NIH test) no longer used (since 2021).
- Around 30/35 batches tested annually for OCABR.
- Around 400-600 mice used annually for SPA. With the challenge test, it would have been >4000 mice.
- The OMCL Anses-Nancy is accredited through MJA scheme according to ISO/EN/17025.

IN VITRO ELISA TESTS

- Currently in use by manufacturers to assess the amount of rabies antigen for consistent batch to batch formulation.
- Ultimate goal from a regulatory perspective: development of a single and universal G-specific ELISA as a substitution to the challenge test. Hardy achievable:
  - Slight variations of rabies virus strains,
  - Monoclonal antibody specificities,
  - Adjuvant differences and technical issues to liberate antigen from adjuvant.

Source: NIVEATM and IABS report, 2019; Gibert *et al.*, 2013; Schiffelers *et al.*, 2014; Sigoillot-Claude *et al.*, 2015; Stokes *et al.*, 2012.

PERSPECTIVES OF *IN VITRO* ELISA TESTS AT ANSES-NANCY

- No unique ELISA test for all rabies inactivated vaccines.
- Need to implement different ELISAs depending on the vaccines under test.
- Achievable for vaccines from Boehringer Ingelheim.
- Requirements:
  - Transfer and validation of the ELISAs procedures,
  - Time/Ressources,
  - Laboratory equipment,
  - Accreditation.

Source: VBRN Annual Meeting, 2022

THANK YOU FOR YOUR ATTENTION!

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