International Cooperation on Harmonisation of Technical Requirements for Registration of Veterinary Medicinal Products

VICH GL55 (BIOLOGICALS: TABST LIVE VACCINES)
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For consultation at Step 4

HARMONISATION OF CRITERIA TO WAIVE TARGET ANIMAL BATCH SAFETY TESTING FOR LIVE VACCINES FOR VETERINARY USE

Recommended for Consultation at Step 4 of the VICH Process
in February 2016
by the VICH Steering Committee

This Guideline has been developed by the appropriate VICH Expert Working Group and is subject to consultation by the parties, in accordance with the VICH Process. At Step 7 of the Process the final draft is recommended for adoption to the regulatory bodies of the European Union, Japan and USA.

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1. INTRODUCTION

Submission of batch safety test data from target or laboratory animals is a requirement for batch release of veterinary vaccines in most regions participating in the VICH[1]. The VICH Steering Committee has decided to aim at harmonization of the batch safety tests across the regions in order to minimize the need to perform separate studies for regulatory authorities of different countries. However, due to the great divergence in requirements between the regions it was concluded to adopt a phased approach. As a first step *VICH GL 50 on the Harmonization of Criteria to Waive Target Animal Batch Safety Testing for Inactivated Vaccines for Veterinary Use* was developed and finally agreed upon in 2013. The second step now focuses on target animal batch safety testing (TABST) for live vaccines and harmonization of criteria on waiving it in regions where it is required.

This guideline has been developed under the principle of VICH and will provide unified criteria for government regulatory bodies to accept waivers for TABST. The use of this VICH guideline to support a similar approach for products for local distribution only is strongly encouraged but is up to the discretion of the local regulatory authority. Furthermore, it is not always necessary to follow this guideline when there are scientifically justifiable reasons for using alternative approaches.

Global implementation of TABST waiver reduces the use of animals for routine batch release and should be encouraged.

1.1. Objective of the Guideline

The objective of this guideline is to provide internationally harmonized recommendations for criteria on data requirements to waive target animal batch safety testing of live veterinary vaccines in regions where it is required.

1.1.1. Background

Most batch safety tests in laboratory and/or target animals on final product can be considered as general safety tests. They apply to a broad group of veterinary vaccines and should provide some assurance that the product will be safe in the target species, i.e. it should reveal “unfavorable reactions attributable to the biological product ...” (Title 9. United States Code of Federal Regulations) or “no abnormal changes” (Minimum Requirements for Veterinary Biological Products under *the Act on Securing Quality, Efficacy and Safety of Pharmaceuticals, Medical Devices, Regenerative and Cellular Therapy Products, Gene Therapy Products, and Cosmetics* in Japan) or, as formerly required in Europe, “abnormal local or systemic reactions”.

Over the last two decades, the relevance of batch safety tests has been questioned by representatives of regulatory authorities and vaccine manufacturers (Sheffield and Knight, 1986; van der Kamp, 1994; Roberts and Lucken, 1996; Zeegers et al., 1997; Pastoret et al., 1997; Cussler, 1999; Cussler et al., 2000; AGAATI, 2002; Cooper, 2008). Particularly, the introduction of Good Manufacturing Practice (GMP) and Good

[1] In the EU TABST is no longer required (see section 2.2.1)

Laboratory Practice (GLP; OECD, 1998) or similar quality systems appropriate to regional requirements as well as a seed lot system into the manufacture of vaccines has greatly increased the consistency of the batches produced and hence their quality and safety. This has also influenced the attitude towards quality control from the traditional batch control for veterinary vaccines (based in major parts on *in vivo* testing) towards putting more emphasis on documentation of consistency of production which is mostly based on in vitro technologies (Lucken, 2000; Hendriksen et al., 2008; de Mattia et al., 2011).

Following the finalization of VICH GL50 concerning TABST for inactivated veterinary vaccines this guideline describes the criteria to waive the target animal batch safety tests for live vaccines.

2. GUIDELINE

2.1. Scope

This guideline is limited to the criteria on data requirements for waiving target animal batch safety tests (TABST) of live veterinary vaccines.

2.2. Regional Requirements

2.2.1. General batch safety testing

Currently the following testing procedures (Table 1) are required for batch safety testing of live veterinary vaccines covered by this guideline:

Table 1:

VICH region	Requirements	Remarks
Europe: – Since April 2013, the target animal batch safety test is no longer required and had been deleted from the European Pharmacopoeia monographs for veterinary vaccines.	*Until 2013:* target species (2 mammals, 10 fish, 10 birds), 10x dose, recommended route, minimum 14 d observation.	Before the TABST was deleted, it could be waived provided that at least 10 consecutive batches from separate final bulks had been tested and product complied with the test.[2]
USA: - 9CFR – General requirements for live bacterial vaccines (113.64)	mice (113.33(b)) 113.33(b) – 8 mice, 0.5 mL ip or sc, 7 d observation AND – dogs (113.40(b)) when recommended for dogs –	These tests are relevant for livestock and canine products. Mouse testing is not required if the agent is inherently lethal for mice.

[2] European Pharmacopoeia (2004) General monograph, Vaccines for Veterinary Use (0062); 4th Edition Supplement 4.6. Council of Europe, Strasbourg, France.

	2 dogs, 10x dose; 14 d observation – calves (113.41) when recommended for cattle – 2 calves, 10x dose; 21 d observation – sheep (113.45) when recommended for sheep – 2 sheep, 2x dose; 21 d observation – swine (113.44) when recommended for swine – 2 pigs, 2x dose; 21 d observation	Vaccines for other species are tested in the target species. The specific test parameters depend on the agent and species.
- 9CFR – General requirements for live virus vaccines (113.300)	mice (113.33(a)) 113.33(a) – 8 mice, 0.5 mL ip or sc, 7 d observation AND in the target species (10x dose) as described above for dogs, cattle, sheep, swine – cats: (113.39(b)) when recommended for cats – 2 cats, 10x dose; 14 d observation Poultry (25 animals, 10x dose; 14 or 21 d observation depending on viral agent)	Vaccines for other species are tested in the target species. The specific test parameters depend on the agent and species.
Japan: – Minimum Requirements for Veterinary Biological Products under the Act on Securing Quality, Efficacy and Safety of Pharmaceuticals, Medical Devices, Regenerative and Cellular Therapy Products, Gene Therapy	a) Safety test using the target species – cattle: 1 or 2 calves, 1x dose, approved route, 14 d observation – swine: 2, 3, 4 or 5 pigs, 1x, 10x, 60x or 100x dose, approved route, 2 or 3 w observation – poultry: 15 or 30 poultry, 1x, 5x, 10x or 100x dose,	When using target species for safety test, animal number, inoculation dose and observation period varies depending on agent.

Products, and Cosmetics	approved route, 2, 3, 4, 5 or 7 w observation – dog: 5 dogs, 1x dose, approved route, 4- 8 w observation – cat: 5 cats, 1 x dose, approved route, 5 or 7 w observation b) Abnormal toxicity test: – guinea pigs: 2 guinea pigs, 5 mL ip, 7 d observation – mice: 10 mice, 0.5 mL ip, 7 to 10 d observation c) Toxicity limit test: – mice: 10 mice, 0.5 mL ip, 7 d observation – guinea pigs: 5 guinea pigs, 5 mL ip, 7 d observation	

2.2.2. Other relevant requirements

2.2.2.1. Quality systems

Good Manufacturing Practices (GMP) and similar quality systems have been established in VICH countries/regions to cover the manufacture and testing of medicinal products including veterinary medicinal products. These quality systems provide assurance that products placed on the market have been manufactured in a consistent and suitable manner.

2.2.2.2. Seed lot system

The establishment of a seed lot system, subject to quality and manufacturing controls, provides further assurance of the consistent production of vaccine batches and resulting batch quality.

2.2.2.3. Pharmacovigilance

The VICH process increasingly includes pharmacovigilance (post-marketing surveillance of medicines) in the veterinary field and the harmonization of the requirements and performance. This provides for early detection of safety problems associated with the inconsistent quality of a vaccine in the field. Thus, pharmacovigilance provides extra information about the product's safety that cannot always be obtained in the TABST.

2.3. Data Requirements for Waiving of Target Animal Batch Safety Tests

2.3.1. Introduction

The TABST may be waived by the regulatory authority when a sufficient number of production batches have been produced under the control of a seed lot system and

found to comply with the test, thus demonstrating consistency of the manufacturing process.

In general, it is sufficient to evaluate existing information which is available from routine batch quality control and pharmacovigilance data, without the need for any additional supplementary studies. The data which should be presented by the manufacturer to support an application to waive TABST are presented below. However, this should not be taken as an exhaustive list, and in all cases applications for waiving the TABST should be accompanied by a summary of all the data and a conclusion on the assurance of the product's safety being maintained.

In exceptional cases, significant changes to the manufacturing process may require resumption of target animal batch safety testing to re-establish consistency of the safety profile of the product. The occurrence of unexpected adverse events or other pharmacovigilance problems which could be avoided using a TABST may also lead to the resumption of the test. For products with an inherent safety risk, it may be necessary to continue to conduct the TABST on each batch.

2.3.1.1. The characteristics of the product and its manufacture

The manufacturer should demonstrate that the product is manufactured following the quality principles, i.e. the product has been manufactured in a consistent and suitable manner.

For those circumstances when *in vivo* batch tests are conducted in target animals for reasons other than the target animal safety test (e.g. potency tests) and these tests include the collection of safety information (e.g. on mortality), it is recommended that manufacturers use these tests to gain additional data of the safety of the vaccine in the target species.

2.3.1.2. Information available on the current batch safety test

The manufacturer should submit batch protocol data for a sufficient number of consecutive batches to demonstrate that safe and consistent production has been established. Without prejudice to the decision of the competent authority in light of the information available for a given vaccine, test data of 10 batches (or a minimum of 5 batches if 10 batches are not manufactured within 3 years) is likely to be sufficient for most products. The data should be obtained from consecutively tested batches from different vaccine bulks. The manufacturer should examine the variability of the local (if applicable) and systemic reactions observed in the TABST results and the nature of these reactions in relation to those observed in any developmental studies submitted in support of the registration or licensure of the product.

Generally, data from TABST of combined vaccines may be used to waive the TABST of vaccines containing fewer antigen and/or adjuvant components provided the remaining components are identical in each case and it is only the number of antigens and/or adjuvant which has decreased. For example, TABST data from a combination product can be sufficient to waive TABSTs for all the fallout products. The manufacturer should provide a summary and discussion of the findings.

The conduct of the TABST shall be in accordance with the regional requirements in operation at the time when the tests were performed. There should be a thorough examination of any batches that have failed the TABST in the time period during which the agreed number of consecutive batches have been tested. This information, along

with an explanation as to the reasons for failure, should be submitted to the regulatory authorities.

2.3.1.3. Pharmacovigilance data

A pharmacovigilance system in accordance with the VICH Guidelines, where available, should have been in place over the period during which the batches for which data are submitted were on the market. Safety information from pharmacovigilance and TABST are by nature different but complement each other.

Available pharmacovigilance data to demonstrate the consistent safe performance of the vaccine in the field should be provided using recent Periodic Safety Update Reports for the relevant time period.

Where there exists a system for post-marketing re-examination of field safety data for new veterinary vaccines, such data should also be considered alongside the pharmacovigilance data.

2.3.2. Procedure for waiving the target animal batch safety test

A report should provide an overall assessment of the consistency of the product's safety and would include taking into account the number of batches manufactured, the number of years the product has been on the market, the number of doses sold and the frequency and seriousness of any adverse reactions in the target species and any investigations into the likely causes of these events.

3. GLOSSARY

Good Laboratory Practices (GLP): A standard for the design, conduct, monitoring, recording, auditing, analysis, and reporting of non-clinical studies. Adherence to the standard provides assurance that the data and reported results are complete, correct and accurate, that welfare of the study animals and the safety of the study personnel involved in the study are ensured, and that the environment and the human and animal food chains are protected (OECD, 1998).

Good Manufacturing Practices (GMP): Is part of a quality system covering the manufacture and testing of medicinal products including veterinary medicines. GMPs are guidelines that outline the aspects of production and testing that can impact the quality of a product standard assuring the quality of production processes and the production environment during the production of a medicinal product.

Production Batch: A defined quantity of starting material, packaging material or product processed in one process or series of processes so that it could be expected to be homogeneous.
Note: To complete certain stages of manufacture, it may be necessary to divide a batch into a number of sub batches, which are later brought together to form a final homogeneous batch. In the case of continuous manufacture, the batch must correspond to a defined fraction of the production, characterised by its intended homogeneity.

Seed Lot System: A seed lot system is a system according to which successive batches of a product are derived from the same master seed lot at a given passage level. For routine production, a working seed lot is prepared from the master seed lot. The final product is derived from the working seed lot and has not undergone more passages from the master seed lot than the vaccine shown in clinical studies to be satisfactory with respect to safety and efficacy. The origin and the passage history of the master seed lot and the working seed lot are recorded.

Target Animal Batch Safety Test (TABST): Safety test in target animals which is performed as a routine final product batch test for all inactivated and/or live veterinary vaccines.

Target Animal: The specific animal species, class and breed identified as the animal for which the veterinary vaccine is intended for use.

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