RHDV : Watch out for a second Strain ...

Be safe : vaccinate against both RHDV1 and RHDV2
New strains since 2010

**WHAT ABOUT?**

Known in France since 1988 in its classic form, the rabbit haemorrhagic disease has evolved since 2010 under a variant form. This usually acute disease is characterized by high mortality (up to 90% in the absence of vaccination).

**Specifications**

This virus is highly resistant in the environment:
- three months in carcasses, the environment and buildings at room temperature,
- one month in the faeces.

**Ways of transmission**

The contamination can be made by several ways: directly orally or intra-ocularly, indirectly by contaminated equipment, feeds, vector insects, rodents

There is no treatment. Prevention is based on biosecurity and vaccination of sensitive populations.

**NEW CIRCULATING VIRUSES**

Since 2010, cases of Viral Haemorrhagic Disease (VHD) on rabbits from properly vaccinated flocks led to the discovery of a new calicivirus referred RHDV2 (Rabbit Haemorrhagic Disease Virus). It currently represents over 90% of the cases listed in livestock and in wildlife.

**THE ABSENCE OF CROSSED PROTECTION IS EXPERIMENTALLY CONFIRMED**

This test was to compare the protection obtained by testing rabbits immunized with the classical vaccine strain alone, the variant strain alone or unvaccinated rabbits (control).

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**Agent**

<table>
<thead>
<tr>
<th>CLASSIC FORM</th>
<th>VARIANT FORM</th>
</tr>
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<tbody>
<tr>
<td>Agent</td>
<td>RHDV</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>8-10 weeks of age</td>
</tr>
<tr>
<td>Evolution</td>
<td>Superacute/acute</td>
</tr>
<tr>
<td>Mortality</td>
<td>high (70-90%)</td>
</tr>
<tr>
<td>Lesions</td>
<td>Icterus +/-</td>
</tr>
</tbody>
</table>

**Lesions**

- Icterus
- Urine
- Epistaxis

**Mortality**

<table>
<thead>
<tr>
<th>Control subjects</th>
<th>Vaccinated CLASSIC (RHDV)</th>
<th>Vaccinated VARIANT (RHDV2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>100%</td>
<td>100%</td>
</tr>
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</table>

**Mortality**

<table>
<thead>
<tr>
<th>Control subjects</th>
<th>Vaccinated CLASSIC (RHDV)</th>
<th>Vaccinated VARIANT (RHDV2)</th>
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<tbody>
<tr>
<td>40%</td>
<td>50%</td>
<td>0%</td>
</tr>
</tbody>
</table>

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**CONCLUSION**

no cross protection
Two inactivated antigens from newly isolated virus strains:
- Inactivated RHDV2 (Variant strain, France, 2012),
- Inactivated RHDV (Classical strain, France, 2011)

The trial was conducted in protected animal facilities. The animals were vaccinated with the FILAVAC VHD K C + V vaccine at the age of 10 weeks divided into several groups tested at 7 days, 6 and 12 months post vaccination, compared to non-vaccinated control rabbits. The challenges were performed either with the classical or the variant strain.

Vaccination at 10 weeks

<table>
<thead>
<tr>
<th>CHALLENGES</th>
<th>+ 7 days</th>
<th>+ 6 months</th>
<th>+ 12 months</th>
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</thead>
<tbody>
<tr>
<td>Variant strain challenge (RHDV2)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Classical strain challenge (RHDV)</td>
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</tbody>
</table>

**SAFETY**
- Aluminium hydroxyde adjuvant
- Overdose and repeated dose trial with FILAVAC VHD K C+V vaccine on 4 weeks of age young rabbits.
- A slight rise in average temperature (+0.6°C to +0.7°C).
- Few local and limited reactions (granuloma on palpation) have been observed after vaccination.

**SIMPPLICITY**

**PACKAGING**
- Single dose packaging ready-to-use
- Shelf-life of the veterinary medicinal product as packaged for sale: 14 months

**ADMINISTRATION:**
- Sub-cutaneous injection.

**CONCLUSION**
Installation of the immunity from 7 days and until 12 months in experimental conditions.
The unique efficient bivalent vaccine against RHDV and RHDV2 strains

Vaccination in accordance with the epidemiology

VACCINATION PROGRAM

Vaccination at 10 weeks

- 10 weeks
- + 12 months

Vaccination

VHD K C+V

A packaging adapted to your activity

single dose packaging
(Ready to be used vial)

Packaging for livestock
(50 doses and 200 doses)


In less than 10 years, Filavie has implemented all the means meeting the international standards GMP (Good Manufacturing Practices) and GLP (Good Laboratory Practices) allowing it to develop and register new vaccines. Filavie leaders have managed to find the best specialists for the control of various steps of vaccine production: isolation, multiplication, inactivation, filling and packaging. Established in a new laboratory opened on June 1st 2012, The persons in charge of the diagnosis, the production and the controls benefit from premises answering the European and American standards for the manufacturing of veterinary vaccines. A strict respect for the procedures allows to reach the quality level of the international standards.

FILAVIE VHD K C+V:
1. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER AND OF THE MANUFACTURING AUTHORISATION HOLDER RESPONSIBLE FOR BATCH RELEASE

2. NAME OF THE VETERINARY MEDICINAL PRODUCT

Vaccination against RHDV and RHDV2 strains

3. STATEMENT OF THE ACTIVE SUBSTANCE(S) AND OTHER INGREDIENT(S)

Rabbit Haemorrhagic Disease Virus strain LP SV.2012 (variant strain 2010, RHDV2), Inactivated...min 1 PD90% * (*)Protective dose at least 90% of the vaccinated animals. Adjuvant: Aluminium hydroxide (Al3+): …0.35 mg. Suspension for injection (1-dose). Concentrate and solvent for suspension for injection (50-dose and 200-dose presentations). Reddish homogeneous suspension before and after dilution. 4. INDICATIONS For active immunisation of rabbits (subcutaneous injection). Onset of immunity: 7 days. Duration of immunity: 12 months. 5. CONTRAINDICATIONS None. 6. ADVERSE REACTIONS Very common: a temporary increase in body temperature of up to 1.6°C can be observed one day after vaccination. Common: Immunization is followed by a limited local reaction (subcutaneous nodule up to 3 mm in diameter) which may be palpable and observable for at least 10 days. The frequency of adverse reactions is defined using the following convention: - very common (more than 1 in 10 animals occurring adverse reactions during the course of one treatment); - common (more than 1 but less than 10 animals in 100 animals, including isolated reports); - uncommon (more than 1 but less than 10 animals in 1,000 animals); - rare (more than 1 but less than 10 animals in 10,000 animals); - very rare (less than 1 animal in 100,000 animals, including isolated reports). 7. TARGET SPECIES Rabbits. 8. DOSAGE FOR EACH SPECIES, ROUTE(S) AND METHOD OF ADMINISTRATION

Subcutaneous use. One dose per subcutaneous injection to each animal with a volume of 0.5 ml for the single-dose presentation or 0.2 ml for the 50-dose and 200-dose presentations. First vaccination from the 10th week of age. The vaccination annual. 9. ADVICE ON CORRECT ADMINISTRATION

Shake well before use. Reddish homogeneous suspension (1-dose). Reddish homogeneous suspension before and after dilution (50-dose and 200-dose). Apply usual aseptic conditions. Take the diluent in a sterile syringe with a sterile needle and inject the diluent into the vial of vaccine. 10. WITHDRAWAL PERIOD Zero days. 11. SPECIAL STORAGE PRECAUTIONS Keep out of the sight and reach of children. Store and transport refrigerated (2°C - 8°C). Do not freeze. Do not use this veterinary medicinal product if it shows any signs of deterioration. 12. SPECIAL WARNINGS Special warnings for each targeted species. No information is available on the use of the vaccine in pregnant animals. Animals with endogenous antibodies. 13. ADVERSE REACTIONS ADVERSA反应 Very common: a temporary increase in body temperature of up to 1.6°C can be observed one day after vaccination. Common: Immunization is followed by a limited local reaction (subcutaneous nodule up to 3 mm in diameter) which may be palpable and observable for at least 10 days. The frequency of adverse reactions is defined using the following convention: - very common (more than 1 in 10 animals occurring adverse reactions during the course of one treatment); - common (more than 1 but less than 10 animals in 100 animals, including isolated reports); - uncommon (more than 1 but less than 10 animals in 1,000 animals); - rare (more than 1 but less than 10 animals in 10,000 animals); - very rare (less than 1 animal in 100,000 animals, including isolated reports). 14. DATE ON WHICH THE PACKAGE LEAFLET WAS LAST APPROVED 2016. 15. OTHER INFORMATION

Single-dose vial with 0.5 ml vaccine. 50-dose vial with 7.5 ml vaccine and vial with 2.5 ml diluent. 200-dose vial with 30 ml vaccine and vial with 10 ml diluent. Not all pack sizes may be marketed.

FOR VETERINARY USE - TO BE SUPPLIED ONLY ON PRESCRIPTION