Pulmo-guard PH-M

INDICATIONS: For use in cattle 30 days of age or older as an aid in the prevention of respiratory disease caused by Mannheimia haemolytica Type A-1 and Pasteurella multocida. This product contains a toxoid as well as cell-associated antigens from multiple isolates of Mannheimia haemolytica Type A-1.

ADMINISTRATION AND DOSAGE: Shake well. Inject 2 mL subcutaneously in the neck. Repeat in 14 to 28 days. Annual revaccination is recommended.

PRECAUTIONS AND WARNINGS: Store below 45°F (7°C). Do not freeze. Use entire contents when first opened. Do not vaccinate within 60 days of slaughter. Epinephrine should be on hand in case of anaphylaxis. Delayed and intermediate hypersensitivity reactions should be treated symptomatically. Hyperacute hypersensitivity reactions or death may occur with a biological product and can cause reduced milk production in lactating dairy cattle. Persistent swelling may occur at the injection site.

Pulmo-guard PHM-1

INDICATIONS: Recommended for the vaccination of healthy, susceptible cattle as an aid in the prevention of respiratory disease caused by Mannheimia haemolytica and Pasteurella multocida.

COMPOSITION: This product contains toxoids (leukotoxoids) and cell-associated antigens from multiple isolates of Mannheimia haemolytica Type A-1 fractions, and cell-associated and soluble antigens from Pasteurella multocida.

DOSAGE: Using aseptic technique, inject 2 mL subcutaneously in front of the shoulder and midway of the neck, away from the suprascapular lymph node. Although only a single dose is necessary to confer active immunity, a booster dose is recommended annually.

PRECAUTIONS: Store between 35-45°F (2-7°C). Do not freeze. Shake well before using. Use entire contents when first opened. Do not vaccinate within 60 days before slaughter. Anaphylactoid reactions can occur. Hyperacute hypersensitivity reactions, including delayed hypersensitivity or death, may occur with a biological product and can cause reduced milk production in lactating dairy cattle. Persistent swelling may occur at the injection site.

Antidote: Epinephrine.

Express 5-PHM

INDICATIONS: For vaccination of healthy, susceptible cattle 30 days of age or older as an aid in the reduction of respiratory diseases caused by Bovine Rhinotracheitis (BRR) virus, Bovine Virus Diarrhea (BVD) Type 1 and 2, Parainfluenza 3 (PI3) virus, Bovine Respiratory Syncytial virus (BRSV), Mannheimia haemolytica, and Pasteurella multocida. This vaccine may be used in pregnant females or calves nursing pregnant females, provided the females were vaccinated pre-breeding according to label directions with any Express® PP vaccine. See insert for details.

COMPOSITION: The amber glass vial contains BRR, BVD Type 1 (Singer 1a cytopathic) and Type 2 (296 cytopathic), PI3, and BRSV MCV viruses. The plastic vial contains toxoids (leukotoxoids) and cell-associated antigens from multiple isolates of Mannheimia haemolytica Type A-1 fractions, and cell-associated and soluble antigens from Pasteurella multocida. The antigens are combined in the Life III adenovirus system. Contains recombinant and thimerosal as preservatives.

DIRECTIONS AND DOSAGE: Rehydrate the modified live virus vaccine by aseptically adding the accompanying bottle of liquid bacterial vaccine. Using aseptic technique, inject 2 mL subcutaneously in front of the shoulder and midway of the neck, away from the suprascapular lymph node. If initial vaccination, report with BRSV, Mannheimia haemolytica, and Pasteurella multocida in 14-28 days. Calves vaccinated before 6 months of age should be revaccinated at 6 months. A 2 mL booster dose is recommended annually.

Pregnant cows and nursing calves may be vaccinated following a pre-breeding vaccination. See insert for details.

PRECAUTIONS: Store out of direct sunlight at 35-45°F (2-7°C). Avoid freezing. Shake well before using. Use entire contents when first opened. Do not vaccinate within 60 days before slaughter. Stressed cattle should not be vaccinated. Use only the contents when first opened. Do not use in animals with a history of epinephrine allergy.

Avoid vaccinating cattle at the same time with P. multocida or BRSV vaccines in 14–28 days. Calves vaccinated pre-breeding according to label directions with One Shot® and Presponse® may be a costly problem for cattle producers. BRD is a complex, stress-related disease. There are multiple causes including viral triggering agents such as IBR, PI3, Type 1 and Type 2 BVDV or BRSV plus a secondary bacterial infection often caused by Mannheimia haemolytica or Pasteurella multocida. Both of these bacteria are typically found in the nasal microflora of healthy calves; however, stress or viral infection can trigger excessive overgrowth of virulent bacterial strains such as M. haemolytica A1 and/or P. multocida. When these bacteria invade the lungs, calves can develop pneumonia.

PULMO-GUARD PHM-1 vaccine helps protect calves from pasteurellosis. PULMO-GUARD PHM-1 bacterin toxoid helps reduce disease caused by M. haemolytica and P. multocida in two ways. It stimulates the calf’s immune system to make antibodies that attack the bacteria plus it stimulates the production of antibodies that neutralize the leukotoxins produced by M. haemolytica.

Benefits of PULMO-GUARD PHM-1

• Single 2 mL Sub SQ dose
• Convenient, ready to use, no mixing
• Proven efficacy and performance in challenge studies and side-by-side comparisons
• Sustained duration of immunity against M. haemolytica and P. multocida
• LIFE III adenovirus system — a stronger, longer immune response. Proprietary oil-in-water system with good syringability.
• PULMO-GUARD PHM-1 is a complete product — including leukotoxin, cell-associated antigens and soluble antigens.
• Contains cell-associated antigens from multiple isolates of Mannheimia haemolytica type A1.
Comparative efficacy and duration of immunity of commercially available M. haemolytica vaccines

This study included one hundred thirty-nine 4-month-old calves divided into five treatment groups and a control group.

<table>
<thead>
<tr>
<th>Group</th>
<th>Vaccine/Dose</th>
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<tbody>
<tr>
<td>1</td>
<td>One Shot (single dose)</td>
</tr>
<tr>
<td>2</td>
<td>Once PMH (single dose)</td>
</tr>
<tr>
<td>3</td>
<td>PULMO-GUARD PH-M (two doses 14 days apart)</td>
</tr>
<tr>
<td>4</td>
<td>PULMO-GUARD PH-1†† (single dose)</td>
</tr>
<tr>
<td>5</td>
<td>Presponse HM (single dose)</td>
</tr>
<tr>
<td>6</td>
<td>Non-vaccinates</td>
</tr>
</tbody>
</table>

- All groups were challenged with a M. haemolytica type inoculum in each lung at day 83, a typical time span from vaccination to weaning and shipping. Another set of five calves from each group were challenged at day 97 following vaccination.
- Mortality rates and lung lesion scores for the PULMO-GUARD PH-M, PULMO-GUARD PH-1 and Presponse HM calves show statistically significant protection compared to the control calves at day 83.
- At day 97, PULMO-GUARD PH-M and PULMO-GUARD PH-1 showed improved protection compared to the other vaccines.
- PULMO-GUARD PH-1 and PULMO-GUARD PH-M provided a significant reduction in calf mortality compared to competitive products in calves given a virulent challenge of M. haemolytica.

Challenge Results — Survival Rates

<table>
<thead>
<tr>
<th>85%</th>
<th>93%</th>
<th>70%</th>
<th>60%</th>
<th>40%</th>
<th>20%</th>
<th>0%</th>
<th>0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Protected Day 83</td>
<td>% Protected Day 97</td>
<td>No % Protected</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

PULMO-GUARD Pasteurellosis Vaccines Provided More Protection from M. haemolytica than Competitive Products

AgriLabs family of Pasteurellosis Vaccines

- PULMO-GUARD® PHM-1 — single dose protection against M. haemolytica and P. multocida with the LIFE III adjuvant system. Vaccinate beef cattle at 1 to 3 months of age or older. Although only a single dose is necessary to confer active immunity, a booster is recommended 21 days prior to subsequent stress. Available in 10-dose and 50-dose vials.
- PULMO-GUARD® PH-M — protection against M. haemolytica and P. multocida with the LIFE I adjuvant system. Vaccinate beef or dairy cattle at 1 to 3 months of age or older. Booster two to four weeks after initial vaccination. Available in 10-dose and 50-dose vials.
- EXPRESS® 5-PHM — combination of a five-way MLV and PULMO-GUARD PH-M. Seven-way protection against IBR, BVD Type 1 and Type 2, PI3, BRSV, M. haemolytica and P. multocida. Vaccinate beef cattle at 1 to 3 months of age or older and booster with BRSV and PULMO-GUARD PH-M two to four weeks after initial vaccination. See product insert for complete details. Available in 10- and 50-dose vials.

PULMO-GUARD PHM-1 Delivers Rapid Onset of Protection in a 15-Day M. haemolytica Challenge Study

Ten randomly selected calves were assigned to the treatment group and received a single dose of PULMO-GUARD PHM-1 Sub Q and five calves were in the non-vaccinated control group. Fifteen days later, all vaccines and non-vaccinates were challenged tracheally with a virulent M. haemolytica.

- Lungs of all the calves were evaluated for lesions.
- 60 percent of the non-vaccinates died within two days of the challenge.
- There was a 73 percent reduction in lung lesions in the vaccinated calves.

Comparative P. multocida challenge study

Calves 3 to 4 months of age were divided into four groups. Treatment groups included PULMO-GUARD PHM-1, Once PMH, Presponse HM and non-vaccinated controls. Calves were commingled until challenge. At day 105, half the calves in each vaccination group were given an intra-tracheal challenge of P. multocida. At day 112, the other half of each treatment group was challenged.

There was no difference in the lung lesion percentage among all the vaccinated groups at day 105. However, following the challenge at day 112, there was a significant increase in lung lesions for calves vaccinated with Once PMH.

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PULMO-GUARD PHM-1, PULMO-GUARD PH-M and EXPRESS 5-PHM Pasteurellosis Vaccines are an Important Part of Every Producer’s Vaccination Program

- Vaccination for pasteurellosis is recommended by most state programs. The preferred vaccine contains a leukotoxoid fraction, like that found in the AgriLab’s family of pasteurellosis vaccines.

*Vaccine used was monovalent M. haemolytica.