

## Comparative efficacy and duration of immunity of commercially available *M. haemolytica* vaccines<sup>1</sup>

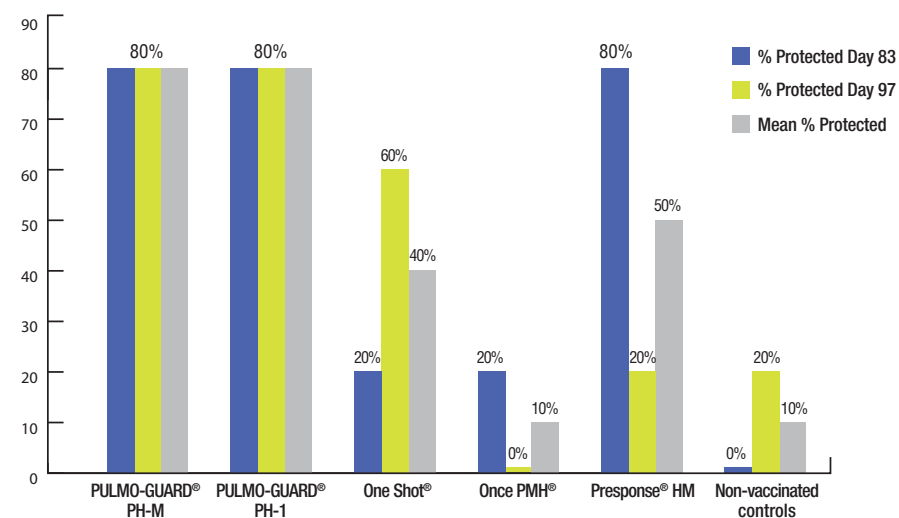
This study included one hundred thirty-nine 4-month-old calves divided into five treatment groups and a control group.

- Group 1** — One Shot (single dose)
- Group 2** — Once PMH (single dose)
- Group 3** — Presponse HM (single dose)
- Group 4** — PULMO-GUARD PH-M (two doses 14 days apart)
- Group 5** — PULMO-GUARD PH-1\* (single dose)
- Group 6** — Non-vaccinated controls

- 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*.

### PULMO-GUARD pasteurellosis vaccines provided more protection from *M. haemolytica* than competitive products<sup>1</sup>

Challenge Results — Survival Rates

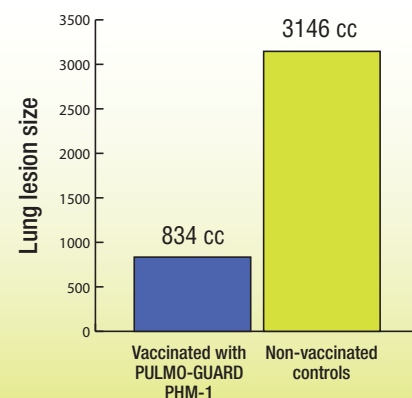


### PULMO-GUARD PHM-1 delivers rapid onset of protection in a 15-day *M. haemolytica* challenge study

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 vaccinates and non-vaccinates were challenged transthoracically 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.

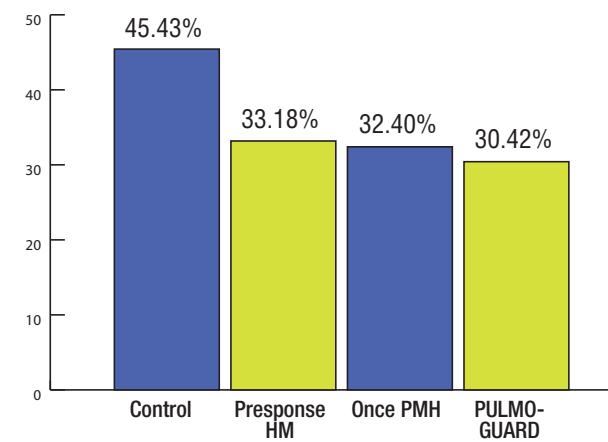
15-day challenge study



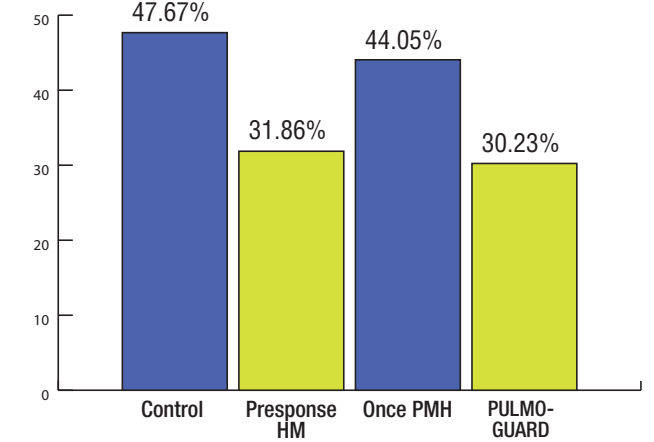
## Comparative *P. multocida* challenge study

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.

Day 105 percentage with lung lesions



Day 112 percentage with lung lesions



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.

### 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 II 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, PI<sub>3</sub>, 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, 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.



<sup>1</sup>Vaccine used was monovalent *M. haemolytica*.