

# Early Research Promising For New Sheep Respiratory Vaccine

Lilian Schaer for Livestock Research Innovation Corporation

**R**esearch into the development of a new vaccine to help fight respiratory problems in lambs is showing encouraging early results.

There's no sole pathogen, virus or bacteria behind the disease complex that resulted in up to 50 per cent mortality, based on pathology results, in young lambs in Alberta due to pneumonia and septicemia.

"That's an exceedingly high number relative to other livestock species, which is what led a collaborator in Alberta, Dr. Joyce Van Donkersgoed, to approach us with a request to help develop a vaccine," says Dr. Andrew Potter, a professor in the Department of Veterinary Microbiology at University of Saskatchewan and Director and CEO of VIDO-InterVac.

Potter and his team targeted three causative bacterial agents at the onset of their research: *Mannheimia haemolytica*, *Bibersteinia trehalosi* and *Mycoplasma ovis*. However, they weren't able to isolate any pathogenic *Mycoplasma* from disease cases so ended up restricting their work to only the first two bacteria.

"They were the two bacteria we were interested in as we had developed a Mannheimia vaccine for cattle in the 1990s and thought we knew what we should be looking for," he explains.

Researchers characterized all the strains of the disease they were able to obtain from Alberta and Ontario using standard diagnostic procedures, and selected six individual proteins as different potential vaccine targets for testing.

Following two sets of vaccine trials, three of the proteins chosen for Mannheimia were successful – the same ones, coincidentally, that worked in the vaccine for cattle. Potter was less successful with Bibersteinia; although he selected the same target proteins, he was unable to create a reproducible disease model to illustrate the vaccine actually worked.

According to Potter, the next step is taking the prototype vaccines into the field for testing in a working sheep operation to see if those lamb mortality numbers can be reduced in a commercial setting.

"There are another half a dozen pathogens associated with respiratory disease, so it is difficult to get that number to

zero, but we can make it much more manageable," he says. "What we are seeing experimentally is protection in the 80 to 90 per cent range, which is pretty good with animal vaccines, and if we can reduce loses by even 75 per cent, that would be wonderful."

The type of vaccine and number of doses hasn't been determined yet; the big unknown for Potter moving forward, though, is the need for a commercialization partner to look after licensing and selling. VIDO-InterVac is not in the business of producing and selling vaccines, so the search is on for a partner with some interest.

The value, believes Potter, lies with the future growth of the industry.

"In North America right now we've been told the (sheep) industry isn't big enough yet to make a vaccine cost effective, but when we look at growth, it might be big enough a few years down the road so it would be a good idea to get in early," he says of potential industry partners.

The three-year project received the bulk of its funding from the Alberta Meat and Livestock Agency, but was also supported by Ontario Sheep Farmers, Canadian Sheep Breeders Association, Alberta Beef Health Solutions, Alberta Lamb Producers, Sungold Specialty Meats and Elanco, with Saskatchewan and Manitoba sheep producer organizations providing in-kind support.

A respiratory vaccine was used in Europe in the 1980s, and although it was imported to Canada, it didn't work on the strains prevalent here. This new vaccine, according to Potter, could be viewed as an updated version of the earlier product.

"We've done the experimental work and it all worked out very well," he says. "The next step is to get it into a real world setting where things aren't as controlled; we would expect it to work similarly there." **OSN**

*This article is provided by Livestock Research Innovation Corporation as part of LRIC's ongoing efforts to monitor and report on Canadian livestock research developments and outcomes. Ontario Sheep Farmers is a member of LRIC.*