ENDOVAC-Dairy’s Broad Spectrum of Protection

The way most vaccines are built, multiple antigens have to be added to the vaccine to get protection from multiple diseases. This cocktail method means that the animal has to respond to lots of different antigens individually. Endovac-Dairy is different for two reasons. First, the way our core technology is built, it is broad spectrum with only one antigen – see diagram. Our unique antigen is the core of all gram-negative bacteria. This allows it to protect against virtually all gram-negative bacterial diseases. Second, Endovac-Dairy is the only gram-negative vaccine to not have harmful active endotoxins. Endotoxins, also known as lipopolysaccharides, are not grown at all by our core antigen. This includes the toxin Lipid A that plagues other gram-negative vaccines.

The only heads up trial of major core-bacterins that you will see was done with 80 cows per treatment group.

<table>
<thead>
<tr>
<th>Treatments</th>
<th>ENDOVAC</th>
<th>J-5 strain</th>
<th>J-Vac</th>
<th>Negative Control</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre to Vaccination (7 Days)</td>
<td>Mean</td>
<td>121.1</td>
<td>94.9</td>
<td>64.5</td>
<td>89.4</td>
</tr>
<tr>
<td></td>
<td>STD</td>
<td>48.3</td>
<td>41.4</td>
<td>10.4</td>
<td>9.2</td>
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<tr>
<td>Post Vaccination (19 Days)</td>
<td>Mean</td>
<td>81.8</td>
<td>126.3</td>
<td>118.7</td>
<td>139.0</td>
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<tr>
<td></td>
<td>STD</td>
<td>25.2</td>
<td>44.7</td>
<td>35.2</td>
<td>40.03</td>
</tr>
</tbody>
</table>

The SCC is significantly affected by all the core antigens when compared to the negative control. The weather conditions made a general increase in all groups with the largest spike in the control. Endovac was the only one to still lower the cell count even in the face of a weather trial.

*data on file at Endovac Animal Health.
ENDOVAC Technologies

Bacterin: Totally Naked Mutant Core that does not have the ability to grow lipopolysaccharide (LPS). The core has a completely exposed cell wall that is common to all gram-negative bacteria.

Toxoid: Separate component that is completely different than the bacterin. It is not just a loose toxin that has separated from the bacterin. It has been totally detoxified yet retains its mitogen properties through stimulation of certain Toll-Like Receptors (TLR). This makes it more than just an adjuvant. It is a true immunostimulant.

Application: DVMs use ENDOVAC-Dairy for virtually any gram-negative disease. Cell walls of all gram-negatives are exactly the same; it is only LPS that differentiates them as separate species and serotypes. Creating a gram-negative mutant that does not have the ability to grow LPS means that we can actually make antibodies for the epitopes on the cell wall. Normal gram-negative vaccines, or even the J5 cores, cannot do this. The antigenicity of the LPS is too strong and the antigen presenting cells completely ignore the cell wall. By putting the gram-negative mutant in completely devoid of LPS and coupling it with a true immunostimulant, we are able to make antibodies for epitopes all over the exposed cell wall.

Two Technologies, One Bottle

Endovac Vaccine
- Unprecedented efficacy
- Does not create large milk drop because it has zero active endotoxins
- Unrivaled pathogens protected

Immune Plus
- Activated immune system for stronger responses
- Only immune stimulant included in a vaccine
- Increases antibodies, lymphocytes, and neutrophils

ImmunePlus™ found only in ENDOVAC Vaccines
ImmunePlus raises the overall response in the immune system of the animal. This is important both for response to vaccination as well as overall health at critical times. As the graphs below demonstrate, two key components of the immune system, lymphocytes and antibodies, are both significantly increased with Immune Plus. Elevating the animal’s own immune response to ward off harmful pathogens, as well as enhancing the response to all administered vaccinations, are key roles of ImmunePlus.