Trial title: The use of a cephalonium containing dry cow therapy and internal teat sealant, both alone and in combination.

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Contains:
• Summary of trial
• Copy of trial paper

Also available: DVD of Dr. Bradley presenting the trial at the IDF Conference
There is so much data on Cepravin. Now we have something new.

The trial looked at the use of Cepravin® with an internal teat sealant (ITS).

The trial demonstrated significant benefits from using Cepravin alone, and the extra benefit of adding an ITS to Cepravin to be relatively minor (especially when compared with the improvement previously seen when an ITS is added to short acting therapy).

Remember, Cepravin has been shown to enhance keratin growth so can act in its own way as a teat sealant.

Thus, while there are certain situations where the addition of an ITS to Cepravin may be beneficial, in most cases Cepravin is performing exceedingly well and there needs to be consideration of the potential drawbacks of the combination therapy:

- Extra cost
- Extra risk of infection
- Extra time required – double the number of treatments
- Extra labour required
- Increased risk the job will be rushed and not done properly.
Trial Conditions

**Uninfected cows** – somatic cell count <200,000 cells/mL

**Infected cows** – somatic cell count >200,000 cells/mL

Study design

<table>
<thead>
<tr>
<th></th>
<th>Cepravin</th>
<th>Cepravin + ITS</th>
<th>ITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infected</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Uninfected</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

Dry Cow Therapy Infected

- Cepravin
- Cepravin + ITS
- ITS

Dry Cow Therapy Uninfected

- Cepravin
- Cepravin + ITS
- ITS

Sampling

- Milk sample of first milk (ITS recovery)
- Milk sample
- Clinical mastitis sample

Drying off

- Post calving

Median quarter SCC (x1000 cells/ml)

<table>
<thead>
<tr>
<th></th>
<th>'Infected' Cows</th>
<th>'Uninfected' Cows</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. uberis</td>
<td>26</td>
<td>30</td>
</tr>
<tr>
<td>E. coli</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>Aerococcus spp</td>
<td>12</td>
<td>19</td>
</tr>
<tr>
<td>Coag +ve Staphylococci</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Enterococcus spp</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Bacillus spp</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Unspeciated Gram ve</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Streptococcus spp</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Mucor spp</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>S. dysgalactiae</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Aspergillus spp</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Pseudomonas spp</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>A. pyogenes</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>All Enterobacteriacae</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>Staphs and Streps</td>
<td>50</td>
<td>56</td>
</tr>
<tr>
<td>Coag -ve Staphylococci</td>
<td>181</td>
<td>189</td>
</tr>
<tr>
<td>Corynebacterium spp</td>
<td>307</td>
<td>310</td>
</tr>
</tbody>
</table>

Trial results

- "Infected" cows Cepravin and teat sealant
- Less major and minor pathogens in the first 10 days post calving

- "Uninfected" cows Cepravin and teat sealant
- Less Staphs and Streps in the first 10 days post calving
**Infected Cows**

Excellent reduction in quarter somatic cell count for Cepravin, while there was no real advantage from adding an ITS.

**Clinical Cases Until 100 Days Post Calving**

If it is necessary to improve on the performance of Cepravin alone, the addition of an ITS as an adjunct can do so.

- After 100 days, 7% of Cepravin and ITS treated cows got clinical mastitis vs. 10% in the Cepravin group
- Cepravin plus an ITS provided a 3% advantage against new infections over Cepravin alone.

**Uninfected Cows**

Cepravin adds to the performance of an ITS.

In the uninfected cows, Cepravin and an ITS were better than just an ITS alone for Gram positive bacteria. The Gram positive bacteria *Staph. aureus* and *Strep. uberis* are the major pathogens in New Zealand.

This study also suggests that in uninfected cows there is benefit from adding Cepravin to an ITS compared with the performance of an ITS alone. This could be because the inclusion of Cepravin:

- Killed bacteria introduced at dry off
- Killed undiagnosed bacteria or
- Killed bacteria in cows where the ITS did not last.
Correct administration is important if using two treatments

The mass of ITS found still in the teat (at first milking/ITS recovery) was significantly greater in cows given the ITS alone than those given both antibiotic and the ITS. It is thought that the oily base of DCT antibiotics can mix with the ITS and make it less likely to remain. This is the case for all DCT antibiotics and it is recommended that antibiotic be massaged up into the gland before applying an ITS to reduce the chance of this happening.

Excellent cure rates (>90%) for Cepravin

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>Infected Cows</th>
<th>Uninfected Cows</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cepravin</td>
<td>Cepravin + ITS</td>
</tr>
<tr>
<td>Number of Quarters</td>
<td>830</td>
<td>831</td>
</tr>
<tr>
<td></td>
<td>n %</td>
<td>n %</td>
</tr>
<tr>
<td>S. uberis</td>
<td>26 92.86</td>
<td>30 93.75</td>
</tr>
<tr>
<td>E. coli</td>
<td>15 93.75</td>
<td>7 100</td>
</tr>
<tr>
<td>Aerococcus spp</td>
<td>12 92.31</td>
<td>19 95</td>
</tr>
<tr>
<td>Coag +ve Staphylococci</td>
<td>11 91.67</td>
<td>12 100</td>
</tr>
<tr>
<td>Enterococcus spp</td>
<td>8 100</td>
<td>7 100</td>
</tr>
<tr>
<td>Bacillus spp</td>
<td>4 100</td>
<td>6 100</td>
</tr>
<tr>
<td>Unspecified Gram -ve</td>
<td>3 100</td>
<td>5 100</td>
</tr>
<tr>
<td>Streptococcus spp</td>
<td>3 100</td>
<td>5 100</td>
</tr>
<tr>
<td>Mucor spp</td>
<td>2 100</td>
<td>1 100</td>
</tr>
<tr>
<td>S. dysgalactiae</td>
<td>2 100</td>
<td>4 100</td>
</tr>
<tr>
<td>Aspergillus spp</td>
<td>1 100</td>
<td>3 100</td>
</tr>
<tr>
<td>Pseudomonas spp</td>
<td>1 100</td>
<td>0 -</td>
</tr>
<tr>
<td>A. pyogenes</td>
<td>0 -</td>
<td>0 -</td>
</tr>
<tr>
<td>All Enterobacteriaceae</td>
<td>21 95.5</td>
<td>13 92.3</td>
</tr>
<tr>
<td>Staphs and Streps</td>
<td>50 92.6</td>
<td>36 94.9</td>
</tr>
<tr>
<td>Coag +ve Staphylococci</td>
<td>181 68.6</td>
<td>189 74.1</td>
</tr>
<tr>
<td>Corynebacterium spp</td>
<td>307 88.2</td>
<td>310 90.4</td>
</tr>
</tbody>
</table>

Infected cows given Cepravin and ITS
• Less major and minor pathogens in the first 10 days post calving.

Uninfected cows given Cepravin and ITS
• Less Staphs and Streps in the first 10 days post calving.
Excellent cure rates with Cepravin
Low numbers of new infections after calving with Cepravin
Adding an ITS on top of Cepravin in high SCC cows is beneficial, although the incremental advantage was relatively minor
The total number of infections, when you add Cepravin to an ITS, is the same as when you use an ITS alone, but the causative organisms are affected
There was a significant decrease in mastitis due to Gram positive organisms when Cepravin was added to an ITS, compared with the ITS alone
Adding Cepravin on top of an ITS in low SCC cows is beneficial where there is a high prevalence of Gram positive infections.

Cepravin plus an adjunct is the only approach shown to improve on the performance of Cepravin alone. It therefore makes sense to ensure clients get the maximum outcome from the antibiotic DCT first.

Good, evidence-based practice supports a step-up approach.
Adding an adjunct therapy should only be considered after the best performing DCT has been used, and has not satisfied all your or your clients’ performance measures.
Full Dairy Potential starts with Cepravin, and continues year-round with a full programme of opportunities for success for your dairy clients – and your clinic.
Cepravin. The #1 foundation for success.

30 years of field tests and on-farm experience
30 years of proven research
30 years of proven success
13 years of market leadership
Guaranteed to deliver results on farm, year on year

Cepravin has an unsurpassed performance record. No other dry cow therapy, or combination of therapies, provides the same convenience and proven extended protection. Cepravin has been shown to reduce clinical mastitis and somatic cell counts significantly, right through into the following lactation.

Cepravin is New Zealand’s #1 dry cow therapy. Anything less can be a compromise.