Evaluation of the efficacy of two intramuscular injections 24 hours apart of 30 000 I.U. of Spiramycin /kg in the treatment of experimentally induced S. aureus mastitis in lactating dairy cows

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Objectives
The objective of this blinded study was to confirm the efficacy of two 30 000 I.U./kg doses of Spiramycin by intramuscular route at 24 hour intervals in the treatment of mastitis in dairy cows following experimental infection with a recent field isolate of Staphylococcus aureus. The clinical efficacy was evaluated in terms of bacteriological cure rate and the non-development of S. aureus strains resistant to Spiramycin. The resistance threshold considered for S. aureus strains is a Spiramycin MIC ≥32 μg/mL.

Materials and methods
On Day 0 a total of 18 lactating cows were challenged with S. aureus into a single hind udder quarter (MIC= 4 μg/mL). Animals were randomly allocated to two groups for treatment (Group 1: Placebo vs Group 2: Spiramycin) once observed to have abnormal milk samples (i.e., presence of clots, blood or watery milk).
A milk sample was collected from the hind quarters of each cow for somatic cell count (SCC) and bacteriology on Day -5 and Day -4 prior to challenge on Day 0, on the first day of treatment (prior to treatment), daily for three days post first treatment and then 7 and 14 days post final treatment. The milk yield of the animals (kg) was recorded twice daily from Day-2 until 14 days post final treatment.

Results
Bacteriological cure 14 days post second treatment (%)
Reduction in clinical signs at 3 days post treatment (%)

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<thead>
<tr>
<th>Treatment</th>
<th>Bacteriological Cure</th>
<th>Reduction in Clinical Signs</th>
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<tbody>
<tr>
<td>Spiramycin</td>
<td>87.5 %</td>
<td>87.5 %</td>
</tr>
<tr>
<td>Placebo</td>
<td>0 %</td>
<td>44 %</td>
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No Spiramycin resistant strains were isolated from all the animals included in the experiment.

The reduction of SCC comparing placebo vs Spiramycin was 29% at day 7 and 62.16% at day 14 respectively.

Conclusions
Spiramycin administered via the intramuscular at 30 000 I.U/kg (twice at a 24h of interval) is efficacious in the treatment of mastitis in dairy cows following experimental infection with a field isolate of S. aureus.

Spiramycin increases the bacteriological cure, provides a rapid reduction of clinical signs and has an impact of the reduction of SCC. This results in a greater milk yield at quarter level.