Comparison of *Salmonella* presence in bovine lymph nodes across feeding stages

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Contents

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INTRODUCTION
Salmonella enterica

- Gram-negative rod bacterium
- #1 cause of bacterial foodborne illness in US
  - 1.2 million illnesses per year
  - 375,000 from FSIS-regulated products
- Fecal contaminant
- Found in lymph nodes

Image: Encyclopedia Britannica
Lymph Nodes

- Immune organs
- Can contain *Salmonella*
  - Originally only mesenteric lymph nodes
  - Now known to contaminate peripheral LN’s
- Embedded in fat → incorporated into trimmings
- *Salmonella* entry
- Environmental effect

Image: Willard-Mack 2006
Objective

To determine if *Salmonella* presence in bovine lymph nodes varied across feeding stages and feedlot environments in South Texas.
MATERIALS AND METHODS
Harvest ($n=20$)

McGregor, TX

Feedlot A

- Stocker
- Feeding
- Finishing
- Harvest ($n=10$)

Feedlot B

- Stocker
- Feeding
- Finishing
- Harvest ($n=10$)

Harvest ($n=10$)
Lymph Nodes

- Collection
  - Warm carcasses
- Superficial Cervical & Subiliac
- 80 nodes/stage → 40 samples/stage

Image Modified from Spurgeon’s Color Atlas of Large Animal Anatomy
Lymph Node Collection
Lymph Node Processing
Salmonella was isolated following the Microbiological Laboratory Guidebook 4.08
• invA: invasin A protein
• Fragment size: 678 bp
RESULTS AND DISCUSSION
Prevalence of *Salmonella*-positive peripheral lymph nodes by location for each feeding stage

<table>
<thead>
<tr>
<th>Location</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>McGregor</td>
<td>0.0 (0/40)</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td><em>(n = 20 steers)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feedlot A</td>
<td>--</td>
<td>0.0 (0/20) A</td>
<td>0.0 (0/18) A</td>
<td>0.0 (0/20) A</td>
</tr>
<tr>
<td></td>
<td>*(n = 10 steers)</td>
<td><em>(n = 9 steers)</em></td>
<td><em>(n = 10 steers)</em></td>
<td></td>
</tr>
<tr>
<td>Feedlot B</td>
<td>--</td>
<td>22.2 (4/18) B</td>
<td>77.8 (14/18) C</td>
<td>94.4 (17/18) C</td>
</tr>
<tr>
<td></td>
<td>*(n = 9 steers)</td>
<td><em>(n = 9 steers)</em></td>
<td><em>(n = 9 steers)</em></td>
<td></td>
</tr>
</tbody>
</table>

A-C: Values lacking a common letter differ *(P < 0.05)*
Serotypes

- Most have been described in LN
- Same serotypes isolated from environmental samples at feedlots
CONCLUSIONS
Conclusions

- *Salmonella* prevalence within LNs differs between feeding stages, locations
- Cattle in feedlots may be at greater risk for *Salmonella* uptake at later feeding stages
- Environmental differences and management practices may play key role in preventing LN *Salmonella* uptake
Acknowledgements

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Questions?
References


