Antimicrobial Resistance of *Salmonella enterica* Isolates Recovered Beef Cattle from Mexico

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INTRODUCTION

- Antibiotic resistance occurs when an antibiotic has lost its ability to control or kill bacterial growth; antibiotic resistance spreads "vertically," when new generations inherit antibiotic resistance genes, and "horizontally," when bacteria share or exchange sections of genetic material with other bacteria.
- World health leaders have described antibiotic-resistant microorganisms as “nightmare bacteria” that pose a catastrophic threat to people in every country in the world.
- Antibiotic resistance threats in the United States in 2013 give a snapshot of the complex problem. Each year in the United States, at least 2 million people become infected with bacteria that are resistant to antibiotics and at least 23,000 people die each year result of these infections.

OBJECTIVE

The main objective was to determine the antimicrobial susceptibility profiles among *Salmonella enterica* isolates recovered beef cattle from México.

MATERIALS AND METHODS

**Antibiotics Tested**

- Cefoxitin: FOX
- Azithromycin: AZI
- Chloramphenicol: CHL
- Tetracycline: TET
- Ceftriaxone: AXO
- Ciprofloxacin: CIP
- Amoxicillin/clavulanic acid: AUG
- Gentamicin: GEN
- Nalidixic acid: NAL
- Ceftiofur: XNL
- Sulfadoxine: SXT
- Sulfamethoxazole: SMX
- Trimethoprim/sulfamethoxazole: SXT

**Samples**

<table>
<thead>
<tr>
<th>City</th>
<th>Hides</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancun</td>
<td>11</td>
<td>60</td>
</tr>
<tr>
<td>Merida</td>
<td>11</td>
<td>60</td>
</tr>
<tr>
<td>Veracruz</td>
<td>11</td>
<td>55</td>
</tr>
</tbody>
</table>

**RESULTS**

<table>
<thead>
<tr>
<th>City</th>
<th>Susceptible</th>
<th>Resistant</th>
<th>Multidrug Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancun</td>
<td>18%</td>
<td>82%</td>
<td>45%</td>
</tr>
<tr>
<td>Merida</td>
<td>48%</td>
<td>52%</td>
<td>68%</td>
</tr>
<tr>
<td>Veracruz</td>
<td>27%</td>
<td>73%</td>
<td>65%</td>
</tr>
</tbody>
</table>

There are significant differences between the resistance profiles of Merida versus Cancun and Veracruz in retail beef. Hides samples present significant differences between Veracruz versus Cancun and Merida, ( *P*-value 0.05).

**RELEVANCE**

- Identify problematic sources to safeguard public health, the dissemination of resistant bacteria strains from animals to human should be controlled.
- Increase awareness of the threat that antibiotic resistance poses and encourage immediate action; Investigate for novel strategies to control and mitigate the impact of using antimicrobial in livestock, that potentially can transfer antimicrobial resistant genes to humans.

**ACKNOWLEDGMENTS**

A cordial gratitude to the International Center for Food Industry Excellence, to Pan-American Agricultural University, Zamorano and SOWER program for allowing the development of this investigation.

**REFERENCES**