A WHO Global Salm-Surv Retrospective Study Examining Salmonella Serotypes in South America, 2000: Dominance of Salmonella Serotype Enteritidis.

South America Salmonella Working Group

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Danish Veterinary Institute, Denmark
Institute Pasteur, France

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- Instituto Nacional de Higiene “Rafael Rangel”

Colombia
- Instituto Nacional de Salud
- Inst. de Vig. de Medicamentos y Alimentos (INVIMA)
- Instituto Colombiano Agropecuario (ICA)

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Paraguay
- Laboratorio Central de Salud Pública

Uruguay
- Centro Nacional de Salmonella, Inst. de Higiene
- Min.de Ganaderia, Agricultura y Pesca (DILAVE)
WHO Global Salm-Surv was created:
✓ To strengthen national and regional laboratory capacity.
✓ To foster collaboration between microbiologists and epidemiologists working in human health, veterinary, and food-related disciplines
✓ To exchange information and communicate *Salmonella* surveillance data

**Key components:**
✓ External Quality Assurance System coordinated by DVI and Institute Pasteur
✓ Regional training courses and reference testing.
✓ Country databank, electronic discussion group and Web Site

**Organizers**
WHO, CDC, DVI and Pasteur Institute

**Participants**
Countries’ *Salmonella* Reference Laboratories
MATERIAL AND METHODS

- The member laboratories received isolates for serotyping from the countries’ lab network.
- *Salmonella* O and H antisera available in each country were used.
- Representatives from national *Salmonella* reference labs attended a Level-2 GSS training course in September 2001.
- *Salmonella* surveillance data were reported in country forms designed by the participants of the South America Working Group.

A retrospective study of the distribution and rank of *Salmonella* serotypes during 2000 was done.
Source of *Salmonella* strains

- **Human**: 2507 (27%)
- **Animal**: 2297 (24%)
- **Feed**: 2028 (17%)
- **Food**: 1591 (21%)
- **Environment**: 1045 (11%)

**N (total) = 9468 (100%)**

**Ns (serotyped) = 9402 (99%)**

( ) total number of *Salmonella* received
The most frequent *Salmonella* serovars by source of strains

Number of *Salmonella* strains serotyped:
- Human: Ns = 2476
- Animal: Ns = 2297
- Food: Ns = 1577
- Feed: Ns = 2007
- Environment: Ns = 1045

*Salmonella* serovars:
- Enteritidis
- Typhimurium
- Typhi
- Heidelberg
- Senftenberg
- Agona
- Rissen
Source of *Salmonella* strains isolated from animals

- Poultry: 80%
- Swine: 8%
- Cattle: 1%
- Other: 11%
- Wild birds: 0.3%

N (total) = 2297 (100%)

Ns (serotyped) = 2297 (100%)
The most frequent *Salmonella* serovars, by type of animal

<table>
<thead>
<tr>
<th>Type of Animal</th>
<th>Percentage of Salmonella strains serotyped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>40% (Ns=25)</td>
</tr>
<tr>
<td>Swine</td>
<td>20% (Ns=176)</td>
</tr>
<tr>
<td>Poultry</td>
<td>80% (Ns=1834)</td>
</tr>
<tr>
<td>Wild birds</td>
<td>100% (Ns=8)</td>
</tr>
</tbody>
</table>

Ns= number of *Salmonella* strains serotyped
Source of *Salmonella* strains isolated from food

- **Meat**: 14%
- **Broilers**: 51%
- **Manufactured food**: 5%
- **Eggs**: 1%
- **Dairy products**: 4%
- **Fish and seafood**: 2%
- **Other**: 23%

N (total) = 1591 (100%)
Ns (serotyped) = 1577 (98.9%)
The most frequent *Salmonella* serovars by type of food

- **S. Enteritidis**
- **S. Typhimurium**
- **S. Senftenberg**
- **S. Aragua**
- **S. Agona**
- **S. Infantis**
- **S. Anatum**
- **S. Hadar**
- **S. Montevideo**
- **S. Heidelberg**

Ns= number of *Salmonella* strains serotyped
CONCLUSIONS

• Most frequent serotype from all sources: *Salmonella* Enteritidis

• Baseline information for a surveillance program is provided.

• Regional differences in isolation rates will be explored.
FUTURE CHALLENGE

- Joint activities of laboratory and epidemiology

- Continuity of the Program for:
  - Strengthening the national networks
  - Obtaining reliable data through the Quality Control System
  - Technology transfer and constant training
  - Supplying strategic reagents
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