

Detection and Incidence of *Salmonella* sp. In Feed and Pet Treats

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COLORADO

Department of Agriculture

Inspection & Consumer Services Division

What do you get when you mix a
scientist with a government employee?

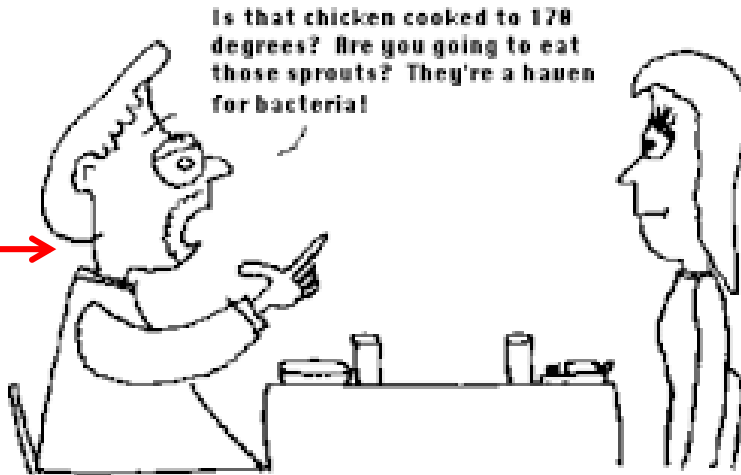
OMG!

WTH is she talking about?



What do you know already?

We are annoying to eat with



WHY MICROBIOLOGISTS HARDLY EVER GET A SECOND DINNER DATE.



Seen it at a restaurant!

Current Leading Causes of Foodborne Illness in the United States - CDC 2013

Pathogen	Cases		Hospitalizations		Deaths	
	No.	Incidence*	No.	%	No.	%
Bacteria						
Campylobacter	6,621	13.82	1,010	15	12	0.2
Listeria	123	0.26	112	91	24	19.5
→ Salmonella	7,277	15.19	2,003	28	27	0.4
Shigella	2,309	4.82	450	19	3	0.1
E. Coli O157	552	1.15	210	38	2	0.4
Non-O157STEC	561	1.17	76	14	2	0.4
Vibrio	242	0.51	55	23	2	0.8
Yersinia	171	0.36	55	32	4	2.3
TOTAL	19,056		4,200		80	

*Per 100,000 population according to CDC



Microbial Ecology of *Salmonella*



- Found globally in feces of mammals, birds, reptiles as well as soil and water
- Heat resistant, pH tolerant and tolerates dehydration
- Thrives in a wet/dry cycle environment
 - Is of special concern in food manufacturing facilities that operate under dry conditions (cereals, spices, nuts, powdered milk, cheese, etc.)
 - Spread by poor hygiene and poor food handling practices
- Over 2300 different serovars
 - ALL serotypes are pathogenic to humans – still the leading cause of death related to foodborne illness
- Nontyphoidal serotypes cause severe abdominal cramps, fever, diarrhea, vomiting, dehydration especially in elderly, very young and those with compromised immune systems

Detection Methodology



- FDA BAM with the exception of the pre-enrichment
 - Performed a validation to replace Lactose broth with Universal Pre-enrichment Broth.
- Screening is performed using AOAC OMA 2004.03 VIDAS Automated Immunoassay
- All VIDAS positive samples are isolated and confirmed using FDA BAM method
- Isolates are sent to FDA Denver District Laboratory for serology and PFGE
 - MOU is in place between our agency and FDA for this testing



What have we found?

Isolated Salmonella from Feed and Pet Treats: 2010-2015

Commodity	<i>Salmonella</i> Positive	No. of Samples
Meat/Bone Meal	8	13
Pig Ears	1	17
Jerky Treats	6	55
Bully Stick	4	29
Other Pet Treats (rawhide, bones, lamb chews)	6	170
Total	25	284
National Recall Cases	4	

Source: Colorado Dept. of Agriculture, ICS, BCL



Concerns

- Human handling of pet treats
 - Do you wash your hands? Do your children?
 - **Lab personnel also need to be aware of risks when handling**
- FERN FDA Study: “576 samples analyzed during Phase 2, 66 samples were positive for Listeria (32 of those were Listeria monocytogenes) and 15 samples positive for Salmonella. These pathogens were isolated from raw foods and jerky-type treats, not the exotic animal dry feeds.” -Foodborne Pathogens and Disease 05/2014



Thank you!

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