Introduction

- Off-site field trips increase food safety risks due to elevated ambient temperatures and variable holding and service conditions.
- Meals are often prepared as sack lunches, stored in insulated coolers, and taken with teachers and students to the off-site location and stored for two or more hours.
- Salmonella and Listeria monocytogenes are potential foodborne pathogen risks associated with foods that are often served in sack lunches.
- Thus, off-site field trips present a food safety challenge for school nutrition programs.

Methods

- A sack lunch with each pathogen was randomly placed in the top, middle and bottom layers (10 lunches per layer; total 30 lunches per cooler) in each cooler (with or without ice packs).
- Coolers were subjected to increasing temperatures (75-150°F) for 5 hrs.
- Food temperatures were recorded in lunches in the top and bottom layers.
- Samples from sandwiches, sliced apples, and baby carrots were plated on selective media to enumerate changes in pathogen populations.
- Data analyzed using the SAS MIXED procedure; 3 replications.

Results

- No differences (P > 0.05) were observed in L. monocytogenes or Salmonella populations comparing time 0 controls and 5-hour populations between cooler packing scenarios (ice or no ice). Therefore, pathogen recovery graphs above were averaged across packing scenarios.
- Product placement within cooler did not result in L. monocytogenes population changes (compared to controls) on sandwiches, sliced apples, or baby carrots.
- L. monocytogenes populations were virtually non-recoverable on baby carrots.
- Product placement in coolers did not result in Salmonella population changes for sandwiches and sliced apples, but a slight population decline was observed on baby carrots placed in the middle and bottom layers of both cooler packing scenarios (P ≤ 0.05).
- This study suggests that time ≤ 5 hours is an adequate safety control for Salmonella and L. monocytogenes in the specific foods studied. This may not be the case for other pathogens or food types.

Applications

- To meet USDA Food Code standards for cold holding, lunches should be packed in insulated coolers with 2-3 layers of ice or ice packs.
- For field trip lunches, foods unlikely to support microbial growth should be selected.
- Child nutrition professionals should be educated about the importance of time and temperature control during field trips.