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Presence of Salmonella in retail meats collected in Mexico

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Purpose: To estimate the prevalence of Salmonella in retail raw beef and pork products in Mexico

Methods: Between 2009 and 2013, a total of 2567 beef and 466 pork samples were collected in Cancun (n=456), Guadalajara (n=318), Merida (n=526), Mexico City (n=786), Monterrey (n=379), and Veracruz (n=568). Samples were collected in open city markets (CM, n=1697), and supermarkets (SM, n=1336). Samples were transported back to Texas Tech University for analysis for Salmonella presence via BAX[®] PCR platform. Isolates were obtained from BAX[®] positive samples.

Results: The overall prevalence of Salmonella in beef and pork products was 14.4% (370/2567) and 9.7% (45/466), respectively. Samples collected in CM were more frequently contaminated (4.2%, 407/1697) than those collected at SM (0.6%, 8/1336). Prevalence of Salmonella in ground pork (GP, 13.9%, 20/144) was higher than in whole pork (WP, 7.5%, 24/322). In the case of beef, 15.1% (353/2334) of whole products (WB) contained Salmonella compared to 7.3% (17/233) of ground products (GB). Salmonella prevalence remained constantly low in SM. However, values varied greatly in CM across cities. Salmonella presence in WB ranged from 1.2% (2/171) in Monterrey to 67.3% (169/251) in Merida. In GB, values ranged from 0% (0/74) in Monterrey to 40% (12/30) in Guadalajara. Salmonella prevalence in WP and GP varied between 0 and 30%, being lowest in Monterrey and highest in Guadalajara for both types of products.

Conclusions: The prevalence of Salmonella in retail beef and pork throughout Mexico varies. Samples collected in SM contained Salmonella at a prevalence value similar to that of the US. Samples collected in CM presented a much higher prevalence likely due to the lack of adequate refrigeration and the fact that most samples come from non-TIF inspected facilities.

Relevance: Our data show that there is a need for food safety education for meat handlers in city markets. Basic sanitation measures need to be implemented at municipal abattoirs, during transportation, and retail handling in order to decrease the prevalence of Salmonella.