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Comparison of *E. coli* Contamination of Ground Meat (In Packaging Made From Butchers) in Urmia City Market

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Abstract: Microbes Desirable and undesirable changes in food has been Create. Adverse changes due to food contamination and food spoilage will eventually. Many types of microbial contamination of foods under conditions that provide prepared or produced. Growth of microbes in food and material composition depends on the storage conditions. Microbes that are able to grow food, metabolic characteristics, change the taste, smell, texture and appearance to transform their products. The aim of this study is Comparison of bacterial contamination of ground meat (in packaging made from butchers) in Urmia city market. From 100 sample of Mince 50 sample are Packed and 50 samples are Prepared by the butcher of the city of Urmia In 4 ml of lactose broth medium enriched, XLD agar medium and then transferred. The following results were obtained after 24 hours. From 100 samples 21% is Salmonella, 59 percent Escherichia coli, 11 percent staphylococcus aureus and 9 percent were negative (do not grow), respectively Were isolated. Today, the proportion of red meat, poultry and eggs in human nutrition, health products is also important. One factor that would endanger the health of poultry food products, especially Salmonella is a bacteria of the Enterobacteriaceae family. On the slaughterhouse meat may be contaminated with feces and stored improperly or incompletely cooked it, survive and even reproduce it. Material and animal products like bone meal, meat meal, feather meal and blood meal fundamental role in the spread of Salmonella.
Keywords: Pollution, Ground meat, Urmia, Bacterial

INTRODUCTION

Food borne *Escherichia coli* O157:H7 infections continue to be a significant public health problem in the United States, causing an estimated 61,153 illnesses and 20 deaths per year [10].

Substantial monetary costs are also associated with food borne *E. coli* O157:H7 infections[5].

In numerous outbreak investigations and evaluations of sporadic *E. coli* O157:H7 infection cases, consumption of ground beef has been identified as a leading cause of infection [1, 4, 9, 10, and 12].

Approximately half of the average American's food budget is spent on meals away from home [3, 13], and the National Restaurant Association (13) estimated that restaurant sales account for approximately 4% of the U.S. gross domestic product. More than 80% of Americans report eating out at least once per week [9, 11].

In 2004, 8.2 billion hamburgers were served in commercial food establishments in the United States [12].

E. coli O157:H7 was first recognized as a human pathogen in 1982, when it was associated with two outbreaks of bloody diarrhea in Oregon and Michigan involving the consumption of hamburgers from a fast-food chain. Since then, E. coli O157:H7 has become a public health concern worldwide, causing outbreaks in the United States, Japan, Canada, Scotland, and Argentina [16] . In 1999, the Centers for Disease Control and Prevention (CDC) estimated that 76 million food borne illnesses occur annually in the United States [17]. An estimated 62,000 cases of symptomatic *E. coli* O157:H7 infections occur annually in the United States due to food borne exposures, resulting in approximately 1,800 hospitalizations and 52 deaths [16]. As many as 3,000 cases may develop hemolytic uremic syndrome annually. Surveillance data indicate that the highest incidence of illness from E. coli O157:H7 occurs in children under 5 years of age [16].

The primary reservoir for *E. coli* O157:H7 is healthy cattle. *E. coli* O157:H7 can be transmitted to humans by contaminated food or water or directly from person-to-person. Food borne *E. coli* O157:H7 cases in the United States have been linked to contaminated

cattle-derived products such as ground beef or milk [16]. Increasingly, fresh produce (such as alfalfa sprouts or lettuce) or related products (such as unpasteurized or untreated cider or juice) have been implicated in disease outbreaks [18]. It is possible that the raw produce and related products are contaminated in the field with the feces or by water contaminated with the feces of infected animals [19].

The aim of this study is Comparison of *E. coli* contamination of ground meat (in packaging made from butchers) in Urmia city market.

MATERIAL AND METHODS

From 100 sample of ground meat, 50 samples are packed and 50 samples are prepared from butcher of the city of Urmia. Enriched in 4 ml of lactose broth medium and then transferred to XLD agar medium. The following results were obtained after 24 hours.

Grown colonies and harvested in the differential medium: SIM, TSI, Simmons citrate and urea agar and VP_MR act was done. After performing a differential culture medium for 24 to 48 hours incubation at 37 ° C was taken.

RESULTS

From 100 samples, 59 percent Escherichia coli, 9 percent were negative (do not grow) and 32percent other bacteria respectively were isolated.

Table 1: Bacteria isolated from 100 ground meat (in packaging made from butchers) samples in Urmia city market

	E. coli	Negative	Other bacteria
Packaging	36	4	10
Made from butchers	23	5	22
Total samples	59	9	32

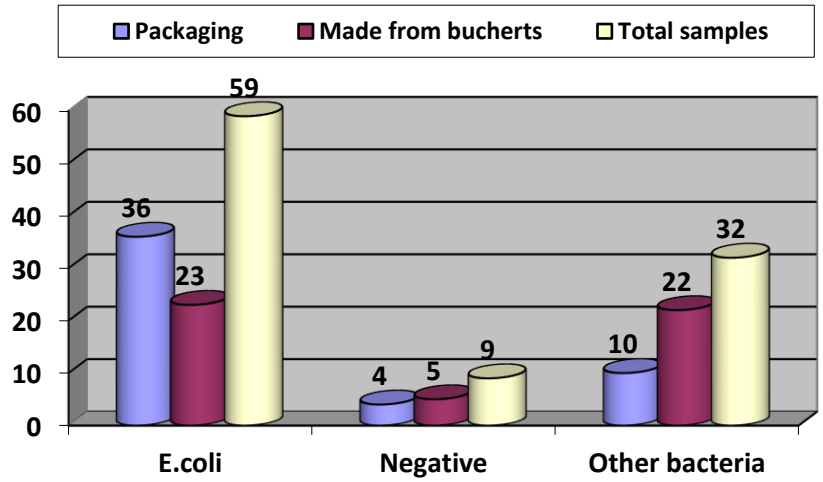

Fig. 1: Bacteria isolated from 100 ground meat (in packaging made from butchers) samples in Urmia city market

CONCLUSION

In this study isolation of E. coli from ground meat 59 percent was reported. From this 59 percent, 36 percent from packaging and 23 percent from made from butchers isolated.

Beef fat may be added to "hamburger," but not "ground beef." A maximum of 30% fat is allowed in either hamburger or ground beef. Both hamburger and ground beef can have seasonings, but no water, phosphates, extenders, or binders added [14].

The labeling of meat food products must comply with the Federal Meat Inspection Act (FMIA) and the meat inspection regulations and labeling policies [15]. Bacteria are everywhere in our environment; virtually any food can harbor bacteria. In foods of animal origin, pathogenic (illness-causing) bacteria, such as Salmonella, Shiga-toxin producing Escherichia coli (STECs), Campylobacter jejuni, Listeria monocytogenes, and Staphylococcus aureus, cause illness [14]. These harmful bacteria cannot be seen or smelled. If the pathogens are present when meat is ground, then more of the meat surface is exposed to the harmful bacteria [14]. Also, grinding allows any bacteria present on the surface to be mixed throughout the meat.

Concluding from this study pathogen bacteria can transmitted to food and make an infection in human. For prevention from this problem can Package Hygiene and sanitation workers considered.

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REFERENCES

1. Bell BP, Goldoft M, Griffin PM, Davis MA, Gordon DC, Tarr PI *et al;* A multistate outbreak of Escherichia coli O157:H7–associated bloody diarrhea and hemolytic uremic syndrome from hamburgers. The Washington experience. J. Am. Med. Assoc.; 1994; 272:1349–1353.
2. Blisard N, Stewart H; Food spending in American households, 2003–04. U.S. Department of Agriculture, Economic Research Service. Economic Information Bulletin 23. 2007; Available at: http://ers.usda.gov/publications/eib23/eib23.pdf. Accessed 11 June 2013.
3. Centers for Disease Control and Prevention. Update: multistate outbreak of Escherichia coli O157:H7 infections from hamburgers—western United States, 1992–1993. Morb. Mortal. Wkly. Rep., 1993; 42: 258–263.
4. Frenzen PD, Drake A, Angulo FJ; Emerging Infections Program Food Net Working Group. Economic cost of illness due to Escherichia coli O157:H7 infections in the United States. J. Food Prot, 2005; 68:2623–2630.
5. Jones TF, Angulo FJ; Eating in restaurants: a risk factor for foodborne disease? Clin. Infect. Dis, 2006; 43:1324–1328.
6. Kassenborg HD, Hedberg CW, Hoekstra M, Evans MC, Chin AE, Marcus R *et al;* Emerging Infections Program FoodNet Working Group. Farm visits and undercooked hamburgers as major risk factors for sporadic Escherichia coli O157:H7 infection: data from a case-control study in 5 Food Net sites. Clin. Infect. Dis, 2005; 38(Suppl. 3): S271–S278.
7. National Cattlemen's Beef Association. 2005; Beef bytes. Available at: http://www.beef.org/uDocs/BeefBytesComplete03-28-05.pdf. Accessed 11 June 2013.
8. National Restaurant Association. 2008. Restaurant industry pocket fact book. Available at: http://www.restaurant.org/Downloads/PDFs/News-Research/Factbook2013_LetterSize.pdf. Accessed 11 June 2013.
9. Rangel JM, Sparling PH, Crowe C, Griffin PM, Swerdlow DL; Epidemiology of Escherichia coli O157:H7 outbreaks, United States, 1982–2002. Emerg. Infect. Dis, 2005; 11:603– 609.
10. Scallan E, Hoekstra RM, Angulo FJ, Tauxe RV, Widdowson MA, Roy SL *et al;* Foodborne illness acquired in the United States—major pathogens. Emerg. Infect. Dis, 2011; 17:7–15.
11. Shiferaw B, Chaves SS, Ryan PA, Medus C, Vugia DJ, Zansky SM *et al;* The EIP FoodNet Working Group. Is eating outside the home associated with gastrointestinal illness? Presented at the 4th International Conference on Emerging Infectious Diseases, Atlanta, GA, 29 February to 3 March 2004.
12. Slutsker L, Ries AA, Maloney K, Wells JG, Greene KD, Griffin PM; A nationwide case-control study of Escherichia coli O157:H7 infection in the United States. J. Infect. Dis, 1998; 177:962–966.
13. Stewart H, Blisard N, Jolliffe D; Let's eat out: Americans weigh taste, convenience, and nutrition. U.S. Department of Agriculture, Economic Research Service. Economic Information Bulletin 19. 2006. Available at: http://ers.usda.gov/publications/EIB19/. Accessed 11 June 2013
14. United States Department of Agriculture Food Safety and Inspection Service, Ground Beef and Food Safety
15. Post R, Budak C, Canavan J, Duncan-Harrington T, Jones B, Jones S *et al*.; a guide to federal food labeling requirements for meat, poultry, and egg products. 2007.
16. Risk Assessment of the Public Health Impact of Escherichia coli O157:H7 in Ground Beef, http://www.fsis.usda.gov/OPPDE/rdad/FRPubs/00-023N/InterpretiveSummary.pdf.
17. Paul S. Mead , Laurence Slutsker, Vance Dietz, Linda F. McCaig, Joseph S. Bresee, Craig Shapiro, Patricia M. Griffin, and Robert V. Tauxe. Food-Related Illness and Death in the United States , 1999; 5(5).
18. http://www.fda.gov/Food/FoodScienceResearch/SafePracticesforFoodProcesses/ucm091265.htm
19. http://www.mayoclinic.org/diseases-conditions/salmonella/basics/causes/con-20029017