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SALMONELLA SEROTYPES ISOLATED FROM LOCAL CHEESE IN MOSUL CITY

H H Ali

Department of Microbiology, College of Veterinary Medicine, University of Mosul, Mosul, Iraq

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ABSTRACT

Total of (60) random samples of local (Fresh, non-salted) cheese collected from different markets of Mosul city were found to be contaminated with Salmonella 7 (11.7%). Three different Salmonella serotypes were identified with *S. agona* was the most prevalent serotype accounting for 3 (42.86%) of all isolates followed by *S.typhimurium* 2 (28.57%) and *S. anatum* 2 (28.57%).

أنماط السالمونيلا المعزولة من الجبن المحلي في مدينة الموصل

هيفاء حسين علي

فرع الأحياء المجهريه في كلية الطب البيطري، جامعة الموصل، الموصل، العراق

الخلاصة

أجريت هذه الدراسة على ستين عينة عشوائية من الجبن المحلي (الطري وغير المملح) والتي جمعت من أسواق مدينة الموصل المختلفة وبينت النتائج أن 7 (11.7%) كانت ملوثة بجراثيم السالمونيلا. تم عزل 3 أنماط مصلية كانت أكثرها تكرارا *S. agona* حيث شكلت 3 (42.86%) تلتها *S. typhimurium* 2 (28.57%) و *S. anatum* 2 (28.57%).

INTRODUCTION

Milk and milk products are considered as ideal media for growth of many microorganisms, during processing, handling and distribution of cheese. As one of the important milk products, it may be subjected to contamination with several types of microorganisms from different sources which impair its utility and sometimes render the product unsafe (1, 2). At the dairy plant, the microbiological quality of the final product depends on the level of coming contamination from raw milk, numbers and types of microorganisms introduced efficiency of processing methods, and hygienic practices in the plant (3). In Australia as in most other countries, the dairy products, particularly cheese, greatly responsible in human illness (4). With respect to microbial safety of dairy products pasteurization is commonly used to eliminate pathogens from raw milk before its further processing into dairy products. The current basis for the microbial safety of cheese is to use pasteurized milk (5). The role of fat in cheese has some kind of protective influence on microbial load; this protective influence could either be due to physical protection of bacterial cell or due to other types of interactions between

Fat in cheese and lipids in the bacterial cell wall (6, 7).

In Mosul city, local processing of cheese is widely spread and being the most popular Products and it is used all the year round, especially in spring and summer. However the control of *Salmonella* in these products is essential before they are delivered for human consumption, therefore a number of articles appeared relating to the occurrence of *Salmonella* in this product (8, 9).

MATERIALS AND METHODS

A total of 60 samples of local cheese were collected randomly from local markets in Mosul city during the period from March to May -2000. Samples were directly transferred by refrigerated containers to laboratory and analyzed immediately without further storage. Methods used for analysis of samples were those described by (10). Twenty five grams of cheese were suspended in 225 ml of buffered peptone water and incubated for 24h at 37 C° for pre-enrichment. One milliliter of pre-enrichment broth was transferred to 10 ml of tetrathionate broth and incubated for 24h at 43 C°. One loop full of tetrathionate broth was streaked on Bismuth Sulfite agar and *Salmonella - Shigella* agar and incubated at 37 C° for 24 h. Suspected *Salmonella* colonies were subjected to conventional biochemical procedures used for the identification of the genus *Salmonella* (11). All strains identified as *Salmonella* were sent for serotyping to the National Salmonella center in Baghdad, Iraq.

RESULTS AND DISCUSSION

This study observed that 7 (11.7%) from 60 samples of the local cheese were contaminated with *Salmonella*. A total of 3 Salmonella serotypes were identified. With *S. agona* being the most common 3 (42.86%). This was followed by *S. typhimurium* 2 (28.57%) and *S. anatum* 2 (28.57%).

Family of enterobacteriaceae contains many species which cause hazard to the consumer, other species are important from economic point of view as milk products. Fever and food poisoning out breaks, among the consumers and a major Canada – wide out break of gastroenteritis due to Salmonella, was traced to contaminated cheese in a commercial lunch pack product (12, 13). Salmonella serotypes, from humans and the most common isolated from animals in Canada, has caused large outbreaks of food borne illness in nursing homes, in hospitals (14). Food–borne bacterial infections due to Salmonella remain a serious threat to human health in both developing and industrialized countries (15). Salmonella infection of animals is also of common occurrence; such infection not only has economic importance in agriculture and animal husbandry but also is believed to be a major factor in the transmission of Salmonella to humans via the food chain (16). The ability of Salmonella to infect and cause invasive disease in humans and animals has been attributed to intracellular survival in phagocyte cells (17,18) This study isolated and identified Salmonella serotypes which contaminated local cheese in Mosul city. A similar study on the incidence of Salmonella in dairy products from Mosul city markets reported an incidence of (6.6%) in cheese (19) . A previous study found a high prevalence of Salmonella in cheese (16%) in Mosul city (9). While Haddam and Ali (8 Examined 185 samples of local cheese in Mosul city found that (10.3%) samples were positive for Salmonella and also found that *S. typhimurium* was the most prevalent serotype. Other studies recorded (7.7%) of contaminated cheese with Salmonella (20). A new study proved that Salmonella was not detected in the examined samples of damietta

cheese (2). Since dairy products manufacturing, handling and distribution in Iraq are carried out under primitive conditions, therefore such high Salmonella contamination was expected and so it is highly recommended that strict hygienic conditions should be adopted during manufacturing and handling of such products and local markets and processing plants should be periodically inspected by specialists .

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