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OCCURRENCE OF YERSINIA ENTEROCOLITICA IN ICE CREAM IN ASSIUT CITY

(With One Table)

By

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دراسة عن مدى تواجد ميكروب اليارسينيا انتيروكولتيكـــــا
في الآيس كريم فـي مدينة أســـيوط

مصطفى خليـــــل

أجرى هذا البحث لمعرفة مدى تواجد ميكروب اليارسينيا انتيروكولتيكا في عينـات من الآيس كريم جمعت عشوائياً من عدة محلات وسوبر ماركت مختلفة في مدينة أسيوط فقـد تم جمع عدد ٦٧ عينة من الآيس كريم وأوضحت النتائج أن عدد ٦ (٩ر٨٪) من العينـــات المفحوصة كانت ملوثة بهذا الميكروب . وقد تم مناقشة النتيجة وبيان خطورة تواجـد هـذا الميكروب على الصحة العامة ومايجب إتخاذه لتفادى إنتشاره .

SUMMARY

67 random samples of frozen ice-cream collected from different retail outlets in Assiut City were examined for the occurrence of Yersinia enterocolitica, 6 of which were contaminated with Y. enterocolitica. The public health implication of its presence in such product is discussed.

INTRODUCTION

Yersinia enterocolitica is responsible for several clinical forms of disease, especially acute gastrointestinal disorders in humans. Current evidence indicates four major means of transmission: direct human to human, direct animal to human, contaminted food, and contaminated water (MEADOWS and SNUDDEN, 1982). Since 1968, there has been a rapid increase in the number of cases of Y. enterocolitica infections reported throughout the world.

Milk products have been convincingly implicated as the source of infection in one large outbreak of Y. enterocolitica enteritis (BLACK et al., 1978). Presence of these organisms in milk products has been also reported by several authors (MORSE et al., 1984; UMOH et al., 1984; CELCIDINA et al., 1985 and BOER et al., 1986).

Although, freezing of Y. enterocolitica is known to cause cell inactivation (GRECZ and EL-ZAWAHRY, 1984), the organism has been isolated from ice-cream by WAUTERS, 1970 and MOLLARET et al., 1972. Prevalence of Y. enterocolitica in ice-cream was 22% in the northeastern region of France (DELMAS et al., 1985).

Since this Gram negative food borne pathogen represents a world wide public

health hazard, this work was carried out to determine the contamination rate of Y. enterocolitica in ice-cream sold in Assiut City.

MATERIALS and METHODS

Samples :

67 random samples of frozen ice-cream were collected from different cafeterias, supermarkets or retailers in Assiut City. The samples were carried in freezer box to the laboratory without delay and examined as soon as possible after their arrival.

Samples were brought to room temperature by setting the containers in warm water, then thoroughly mixed and examined according to procedures adopted in Standard Methods for Examination of Dairy Products (RICHARDSON, 1985).

Enrichment :

Phosphate-sorbitol bile medium (MEHLMAN et al., 1978) was used with incubation at 4°C for 21 days. Alkali treatment by the method of (AULISIO et al., 1980) and (DOYLE and HUGDAHL, 1983) was done by transferring 0.5 ml of enrichment medium to 4.5 ml of 0.25% KOH and holding the exposure for 2 min.

Isolation and identification :

The selective plating medium used was cefsulodin-irgasan - novobiocin (CIN) agar (Oxoid) (SCHIEMANN, 1979). Plates were streaked with a loop of KOH-treated medium and then incubated at 27°C for 24 or 48 h. Characteristic Yersinia colonies were identified according to the procedures described in the Compendium of Methods for the Microbiological Examination of Foods (SPECK, 1984).

RESULTS

The obtained results are summarized in table 1.

Table (1): Isolation rate of Y. enterocolitica from examined ice-cream samples.

No. of examined samples	No. of samples Y. enterocolitica positive	%
67	6	8.9

DISCUSSION

Y. enterocolitica was recovered from 6 (8.9%) samples of ice-cream. DELMAS et al., 1985, found a greater prevalence of Y. enterocolitica in ice-cream. The present results are somewhat higher than those obtained by BOER et al. (1986), who found that 5% of 121 ice-cream samples contaminated with Y. enterocolitica. The difference in these results may be due to different temperatures used in storing the product. Grecz and El-Zawahry in (1984) reported that freezing to -18 and -75°C resulted in only 7 and 42% cell inactivation, respectively.

The dangerous nature of Y. enterocolitica is magnified by its ability to survive and muliply in refrigerated food at 0 to 4 °C (LEE, 1977 a,b). Although, there are no documented outbreaks of food-borne illness caused by Y. enterocolitica associated with ice-cream, outbreaks of yersiniosis due to chocolate milk have been reported (BLACK et al., 1978), moreover enterotoxigenic strains Y. enterocolitica have been isolated from milk products (FRANCIS et al., 1980).

In conclusion, presence of Y. enterocolitica in ice-cream may constitute a public health problem, but environmental hygiene and sanitation during processing and using lower freezing storage temperature should apply for controlling disease caused by this organism.

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