قسم الرقابة الصحيـــة على الاغذيـــة
كلية الطب البيطري ـ جامعة القاهرة
رئيس القسم : أ٠د/عبد الوهاب مرسى

المكورات العنقودية الذهبية المفرزة للسموم فى الكريم والمثلج اللبنى

رجاء شحاته ، صبرى مرجان ، محمـــدى حـــلاوة

أجريت الدراسة على مائة عينة (٥٠ من كل من القشدة والمثلج اللبنى) لتقريـــر مدي تلوثهـــا بالمكور العنقودي الذهبى وتصفيفة بيوكيميائيا وسيرولوجيا لتحديد مـــدى سمية العترات المعزولة ٠

وقد أسفرت الدراسة عن تواجد المكور العنقودى الذهبى بنسبة ٨٢٪ ، ٩٤٪ فى كـل من عينات القشدة والمثلج اللبنى على التوالى بمتوسط قدره $٣,١ \times ١٠^{٤} + ٦,٣ \times ١٠^{٤}$ ، $١,٦٢ \times ١٠^{٥} + ٥,٤٥ \times ١٠^{٥}$ على التوالـــى ٠

تبين من التصنيف السيرولوجى لسموم المكور العنقودى الذهبى أن عتراتين فقـــط من الميكروب المعزول من القشدة تفرز سموم من نوع B, C بينما كانت العترات المعزلة من المثلـــج اللبنى قادرة على افراز السموم الاتية A, D, E, A B, B, C D

هذا وقد نوقشت أهمية الميكروبات المعزولة من الناحية الصحية وكذا الاجـــراءات الواجب اتباعها حماية للمستهلك وضمانا لجودة المنتج ٠

Dept. of Food Hygiene,
Faculty of Vet. Med., Cairo University,
Head of Dept. Prof. Dr. A.W. Moursy.

ENTEROTOXIGENIC STAPHYLOCOCCI IN CREAM AND ICE-CREAM

(With 2 Tables)

By
RAGAA S. HAFEZ; S.D. MORGAN and M.A. MOHAMED

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SUMMARY

One hundred random samples of cream and ice-cream (fifty each), collected from different localities in Cairo & Giza governorates were examined for enumeration, isolation and identification of enterotoxigenic Staph. aureus.

Staph. aureus could be isolated from 82% and 94% of examined cream and ice-cream samples with a mean viable count of $6.3 \times 10^4 \pm 3.187 \times 10^4$ and $1.62 \times 10^5 \pm 0.545 \times 10^5$ respectively. Out of 30 Staph. aureus strains isolated from cream samples, only two were found to be enterotoxigenic producers and the enterotoxins produced were B&C. 8 strains from ice-cream isolates proved to be enterotoxigenic and that enterotoxins A,B,D,E,AB and CD could be detected.

INTRODUCTION

Presence fo viable staphylococci in foods initially and their subsequent growth during processing and storage could lead to presence of various enterotoxins capable of causing food-poisoning. Staphylococcus food-poisoning has been repeatedly shown to be the most prevalent form of food-poisoning outbreaks in many countries (ANGELOTTI, 1969; BECKERS, 1982; ARAUJO, 1984 and ABO EL-NAGA, et al. 1985).

At present five serological different enterotoxins are recognized A, B, C, D and E. The existence of other unidentified enterotoxins have been reported (BEAN & ROBERTS, 1975 and BERGDOLL, et al. 1976).

Foods most often associated with staphylococcal food-poisoning are high-protein foods such as milk and manufactured dairy products, as recontamination during manufacturing may occur, where staphylococci can grow resulting in enterotoxin production. As little as 1-10 mg. of enterotoxin are sufficient to cause poisoning in sensitive indivduals (BERGDOLL, 1970).

As cream and ice-cream are among the most popular dairy products consumed in our country, therefore, this study was carried out to investigate the incidence of Staph. aureus in both products as well as the possible presence of enterotoxigenic S.aureus strains.

MATERIAL and METHODS

One hundred random samples of cream and ice-cream (fifty each) collected from different localities in Cairo & Giza Governorates were examined for enumeration, isolation and identification of enterotoxigenic Staph. aureus.

Preparation of samples:

Samples of fresh cream proved to be heat treated were rejected.

Staph. aureus count was determined by using Baird-Parker agar medium (I.C.M.S.F., 1978).

Isolation & identification of Staph. aureus was carried out as described by BUCHANAN & GIBBONS (1975).

Assay of enterotoxin:

Crude enterotoxins (reference toxins and their specific antisera were kindly supplied by Prof. Dr. BERGDOLL (Food Research Institute, Univ. of Wisconsin, Madison, U.S.A.).

The crude enterotoxins were prepared according to the technique recommended by BERGDOLL (1974).

For detection of enterotoxins, the microslide technique described by I.C.M.S.F. (1978) was applied.

RESULTS and DISCUSSION

Results given in Table (1) illustrate that Staph. aureus could be isolated from 82% and 94% of examined cream and ice-cream samples with a mean viable count of $6.3 \times 10^4 \pm 3.187 \times 10^4$ and $1.62 \times 10^5 \pm 0.545 \times 10^5$ respectively.

The relatively high Staph. aureus content in cream samples obtained in this work, is indicative of the neglected sanitary measures under which the product is produced, handled and distributed. While the high incidence of Staph. aureus in ice-cream samples may be due to contamination of the mix during it's preparation specially at small vendors as it is often stored for hours or overnight, giving opportunity for staphylococci to multiply and produce it's enterotoxins (CUSTOT, 1967 & ROUHBEKHSH - KHALEGHDOUST, 1985).

Out of 30 Staph. aureus strains isolated from cream samples, only two were found to be enterotoxigenic producers and the enterotoxins produced were B & C (Table 2).

8 strains from ice-cream isolates proved to be enterotoxigenic and that enterotoxins A, B, D, E, AB and CD could be detected (Table 2).

Food - poisoning outbreaks attributed to consumption of cream and ice-cream were reported by VULLO, et al. (1967), BECKERS (1982) and ROUHBAKHSH - KHALEGHDOUST (1985).

In conclusion, to safe-guard consumers from food-poisoning infection and to save the products from boing spoiled on the market, hygienic control measures should be strictly applied during manufacturing, handling and distribution.

Table (1)
Statistical analytical results of Staph. aureus count/ml. of examined samples

Examined samples	Total No. of samples	Positive No.	Positive %	Min.	Max.	Mean	S.E.D.
Cream	50	41	82	9×10^2	1.2×10^6	6.3×10^4	3.187×10^4
Ice - cream	50	47	94	2.4×10^2	1.84×10^6	1.62×10^5	0.545×10^5

Table (2)

Enterotoxin production by Staph. aureus strains isolated from examined samples

	No. of strains tested	No. of enterotoxigenic strains	No. of strains which produced enterotoxins						
			A	B	C	D	E	AB	CD
Cream	30	2	-	1	1	-	-	-	-
Ice - cream	30	8	2	1	-	1	2	1	1

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