قسم المراقبة الصحية على الأغذية
كلية الطب البيطري - جامعة أسيوط
رئيس القسم : أ.د/ توفيق البسيوني

التقييم الميكروبيولوجي للزبادي المنتج في مدينة أسيوط

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تم جمع ٤٠ عينة من الزبادي المنتج محليا في مدينة أسيوط لفحصها ميكروبيولوجيا لمعرفة الحالة الصحية لانتاجها .

دلت النتائج على أن متوسط العدد الكلي لكل من الميكروبات القولونية ، الميكروبات الكروية المعوية ، الميكروبات المحبة للبرودة ، الخمائر والفطريات هو ٥٫٢٨ × 10^3 ، ٣٫٣٦ × 10^3 ، ٩٫٣١ × 10^3 ، ٨٫١٨ × 10^5 ، ٨٫٥ × 10^4 على التوالي بالاضافة الى عزل عدد كبير من الميكروبات الممرضة التي تؤدي الى فساد المنتج بنسب متفاوتة .

ان وجود هذه الميكروبات بأعداد كبيرة لهو دليل على اهمال الاشتراطات الصحية الواجبة أثناء تصنيع وتداول هذا المنتج نو استخدام بادئ من مصدر ملوث غير معروف بجانب ما تشكله تلك الميكروبات من خطورة على الصحة العامة .

تم مناقشة الأهمية الصحية للميكروبات المعزولة ، كما نوقشت الشروط الصحية الواجب توافرها لانتاج الزبادي .

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MICROBIOLOGICAL QUALITY OF YOGHURT PRODUCED IN ASSIUT CITY

(With Two Tables)

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SUMMARY

Fourty random samples of yoghurt were collected from Assiut City markets and examined microbiologically to evaluate its sanitary condition.

The average counts of coliforms, enterococci, psychrotrophs, yeasts and moulds per gm. were 5.28×10^3, 3.36×10^3, 9.31×10^3m 8.18×10^5 and 8.5×10^4, respectively. Furthermore, E.coli, Enterobacter species, proteus species, Serratia species, Staph. epidermidis, Micrococci and anaerobic spore- formers could be isolated in different percentages.

The public health importance of the isolated organisms as well as recommended hygienic measures for yoghurt making were discussed.

INTRODUCTION

Yoghurt is the traditional form of sour milk of many countries. The ideas of Metchnikov about the health-giving properties of soured and fermented milks still linger. Although, yoghurt posses a high food value, yet it may at times be a dangerous source of infection transmitting enteric fever and food poisoning outbreaks to consumers.

Souring can not be relied upon for controling all pathogenic organisms, certain dangerous microorganisms could survive for days in fermented milks of quite high acidity. It has been stated that the presence of certain types of microorganisms such as coliforms and enterococci are useful index in determining the hygienic quality of the product, as well as, could be used as index of faecal contamination. Yoghurt has been evaluated microbiologically by several workers, coliforms could be isolated from yoghurt by MERGIER (1961), ARNOTT, et al. (1974) and AHMED and EL-BASSIONY (1978). Moreover, E.coli were recovered from yoghurt samples examined by ABD EL-MALEK and EL-DEMERDASH (1956); EL-SADEK and MAHMOUD (1958); MOURSY (1969), TZANETAKI (1974) and AHMED and EL-BASSIONY (1978). While ARONTT, et al. (1974) and AHMED and EL-BASSIONY (1978) could isolate enterococci and anaerobic spore-formers from yoghurt samples. Furthermore, JONDANO (1984) suggested that enterococcus count is more reliable than coliforms and E.coli for the measurment of the hygienic quality of yoghurt.

On the other hand, the contamination of yoghurt by psychrotrophs has been reported by ARNOTT, et al. (1974) and ABDEL-HAKIEM (1986). The presence of such organisms could serve in predecting the life of refrigerated foods. While, presence of yeasts and moulds in

yoghurt is indicative of poor sanitary practices in preparation and pakaging. Total yeast and mold counts were determined in yoghurt by ARNOTT, et al. (1974). Recently, BDEL-HAKIEM (1986) reported that most of the examined yoghurt samples (97.5%) had total yeast and mould counts within the range of 10^2-10^4/gm.

Therefore, this work was planned to secure infromations regarding the sanitary conditions as well as pathogenes that may contaminate the product produced and sold in Assiut City.

MATERIAL and METHODS

Fourty random samples of yoghurt produced in Assiut City were collected from dairy shops and street pedlers. All samples were transferred to the laboratory with a minimum of delay and were prepared for microbiological examination according to A.P.H.A. (1972).

Coliform and psychrotrophic counts:

Violet red bile agar and standard plate count agar were used as recommended by A.P.H.A. (1972).

Enterococcus count:

Enterococcus Selective Differential agar (E.S.D) was used for enterococcus count as recommended by EFTHYMIOU, et al. (1974).

Total yeast and mould counts:

Malt extract agar was used according to HARRIGAN & MARGARET (1976).

Detection of anaerabic sporeformers (Stormy fermentation test):

The technique adopted is that recommended by CRUICKSHANK, et al. (1969).

Detection of pathogenic microorganisms:

The procedures used for isolation and identification of pathogenic microorganisms, namely bacteria of enteric group and staphylococci were carried out according to COWAN and STEEL (1974).

RESULTS

The obtained results from the examined samples of yoghurt were recorded in tables 1&2.

DISCUSSION

The results obtained and recorded in table 1, show that the average counts of coliform, enterococci, psychrotrophs, yeasts and moulds recovered from the examined yoghurt samples were 5.28×10^3, 3.36×10^3, 9.31×10^3, 8.18×10^5 and 8.5×10^4 respectively. The relatively high incidence of coliforms and enterococci is considered to be indicative of unsanitary processing condition. Nearly similar results were recorded by AHMED and EL-BASSIONY (1978), and higher results were reported by MERGIER (1967) and MOURSY (1969), while, lower counts were obtained by ANNOTT, et al. (1974). Also psychrotrophic bacteria were previously isolated from yoghurt by ARNOTT, et al. (1974) and ABDEL-HAKEIM (1986). The presence of psychrotrophic bacteria

is indicative of poor quality product, while, occurence of yeast and mould reflect the poor sanitary practices in manufacturing or packaging.

The results obtained and recorded in table 2, show the incidence of E.coli, Enterobacter species, proteus species, serratia species, staph. epidermidis, Micrococci and Anaerobic spore-formers recovered from the examined yoghurt samples. Similar organisms could be isolated from yoghurt samples examined by MOURSY (1969), ARNOTT, et al. (1974) and AHMED and EL-BASSIONY (1978). The presence of organisms in yoghurt whether pathogenic or non pathogenic may be due to the inadequate hygienic measures in production, handling, distribution and/ or the use of unknown microbiological quality of yoghurt cultures.

The overall picture of yoghurt quality in Assiut as measured by microbiological evaluation appears to indicate a need for strict hygienic measures during production, handling and distribution to make good and safe product.

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Table (1)

Counts of microorganisms enumerated in examined yoghurt samples

Counts	Test	No. of samples examined	Positive samples		Count/gm		
			No.	%	Min.	Max.	Average
Coliform		40	16	40	80	6.24×10^3	5.28×10^3
Enterococcus		40	22	55	30	7.2×10^4	3.36×10^3
Psychrotrophic		40	34	85	50	7×10^6	9.31×10^3
Yeast		40	19	47.5	100	6×10^6	8.18×10^5
Mould		40	32	80	60	1.72×10^6	8.5×10^4

Table (2)

Frequency distribution of isolates in yoghurt samples

Isolate	No.	%
E.coli	7	17.5
Enterobacter spp.	9	22.5
Serratia spp.	5	12.5
Staph. epidermidis	1	2.5
Proteus spp.	8	20
Micrococci	4	10
Anaerobic sporeformer	6	15