

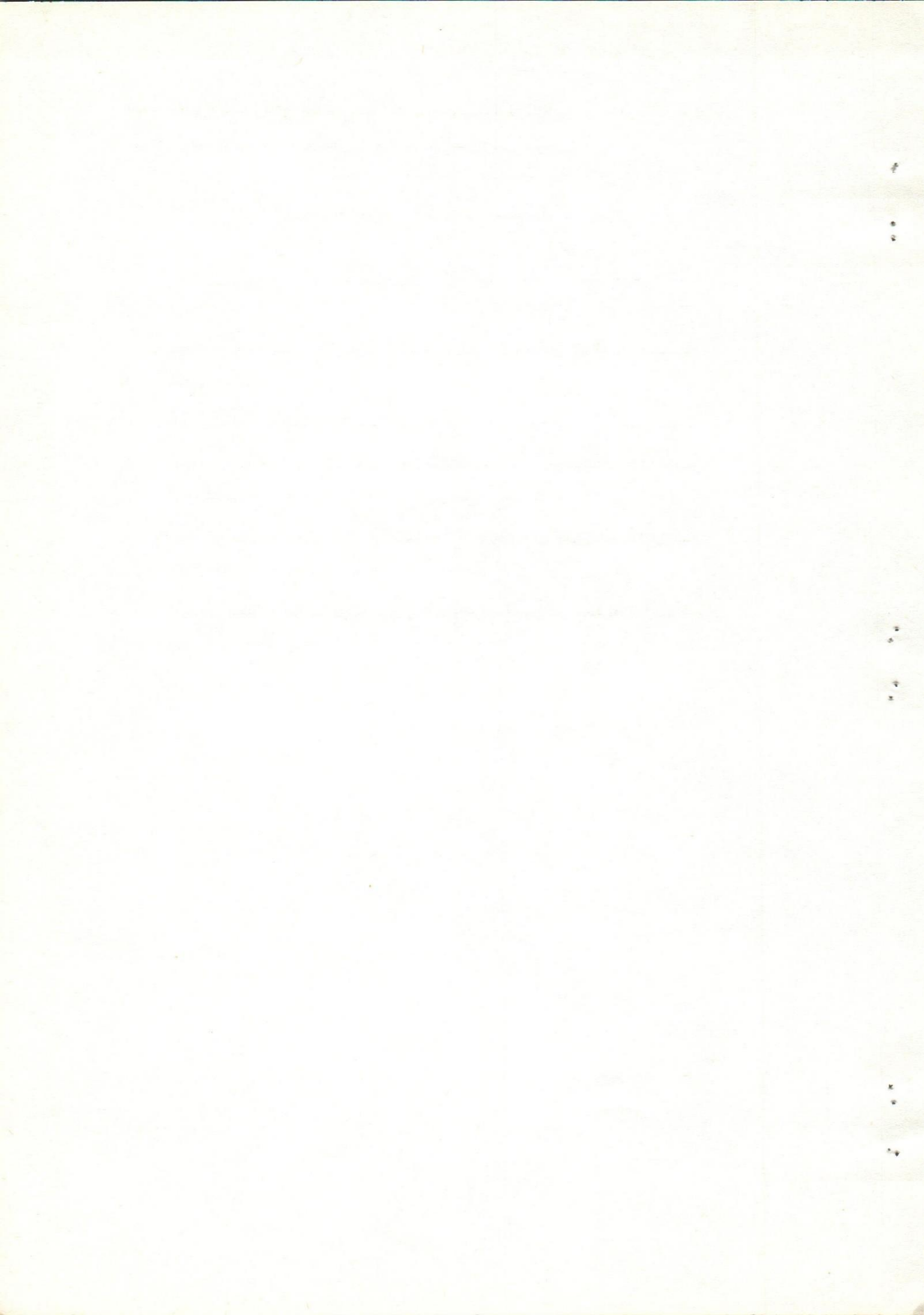
قسم : الصحة والطب الوقائي - كلية الطب البيطري - جامعة الزقازيق ، القاهرة .

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### دراسة عن الحالة الصحية للسرد بين المصنع محليا

محمود زيدان ، علاء الدين مرشدي ، محمد صديق ، سوسن رشدي

- تناولت الدراسة الفحص البكتريولوجي لعينات من السرد بين المصنع محليا لمعرفتها حالتها الصحية .
- بلغ متوسط العدد الكلي للميكروبات الحية في العضلات ٣٩٤٢ × ١٠<sup>٦</sup> / جرام
- أمكن عزل الميكروب العنقودي الذهبي من جميع العينات حيث تراوح العدد الكلي لهذا الميكروب ٣ × ١٠<sup>٣</sup> ، ٣٨٨ × ١٠<sup>٤</sup> في الجرام الواحد .
- اثبت الفحص تواجد الميكروب السبحي من نوعي فيكالس وفيشيم في جميع العينات التي تم فحصها بعدد يتراوح بين ٣ × ١٠<sup>٣</sup> ، ٤٢ × ١٠<sup>٤</sup> .
- نوقشت الأهمية الصحية للميكروبات المتواجدة ، واقترحت الإجراءات الصحية الواجب اتباعها لحماية المستهلك .



STUDIES ON THE SANITARY CONDITION OF LOCALLY MANUFACTURED SARDINE  
(With 3 Tables)

By

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SUMMARY

- Twenty random samples of locally manufactured sardine were examined bacteriologically to determine their sanitary condition.
- The average total viable count was  $39.42 \times 10^6$ /gm. muscle. Comparatively higher total viable count could be obtained by incubating at 25°C for 3 days.
- Staph. aureus could be isolated from all samples examined and their total counts ranged between  $3 \times 10^3$  and  $38 \times 10^7$ /gm.
- Strept. faecalis & Strept. faecium proved to exist in all examined samples. Their total counts ranged between  $3 \times 10^3$  and  $4.2 \times 10^4$ .
- The public health importance as well as control measures are discussed.

INTRODUCTION

Fish is considered an excellent source of animal protein of high biological value.

Being a perishable food and liable to contamination from different sources, it is necessary to resort to a method of preservation to prolong its shelf-life. Salting is a common method of fish preservation in our country.

Sardines, a kind of salted fish, is a popular wide spread food article all over the country.

As far as we know, no systematic study has been conducted to throw light on the sanitary condition of locally manufactured sardine, therefore this work was carried out to fulfil this gap.

MATERIAL and METHODS

Twenty random samples of locally manufactured sardine were collected from different shops. On arrival to the laboratory, samples were subjected to the following examinations:

I- Total viable count:

The total viable count was carried out according to the technique recommended by THATCHER & CLARK (1978).

II- Staphylococci count:

The relation of enterotoxin production of other physiological and cultural characteristics of the Staphylococci has been extensively studied, but no single property is an absolutely reliable index of enterotoxigenicity.

Baird Parker medium proved its efficiency as a selective medium for detection and isolation of pathogenic Staph., specially if confirmed with coagulase test. Therefore such procedure is to be used in this investigation, according to THATCHER & CLARK (1978).

III- Enterococci count:

Enterococci selective differential agar (E.S.D.) developed by EFTHYMIU et al. (1974) proved its efficiency for rapid identification and count of Enterococci. Therefore this medium was used in this work.

RESULTS

Results are presented in tables - 3.

## DISCUSSION

Total viable count:

It is evident from the results recorded in table (1) that the total viable count at  $35^{\circ}\text{C} \pm 1^{\circ}\text{C}$  ranged from  $4 \times 10^6$  to  $80 \times 10^6$  with  $39.42 \times 10^6/\text{gm}$ . muscle as an average. At  $25^{\circ}\text{C}$ , comparatively higher counts could be obtained.

The high viable count reported here-in, is indicative of inferior quality of additives used, unsatisfactory sanitation during handling, processing and distribution as well as high storage temperature. (LISTON and SHEWAN, 1965 and THATCHER and CLARK, 1978).

Staphylococci count:

*Staph. aureus* could be isolated from the muscles of all examined samples and their count ranged between  $3 \times 10^3$  and  $38 \times 10^3/\text{gm}$ . with an average of  $9.11 \times 10^3/\text{gm}$ .

Such results substantiate what has been reported by SEDIK (1971) and MORSHDY (1980).

Presence of *Staph. aureus* in processed foods, is indicative of the personal hygiene of the factory workers or food handlers. Inadequately sterilised utensils and equipments may add to *Staph.* contamination.

Many foods have been implicated in *Staph.* food poisoning. Prominent in terms of frequency are meat and fish products, particularly sardines.

Enterococci count:

The summarized results given in table (1 and 2) declare that the count of *Strept. faecalis* varied from  $4 \times 10^3$  to  $40 \times 10^3/\text{gm}$ . with an average of  $10.50 \times 10^3/\text{gm}$ . while *Strept. faecium* ranged between  $3 \times 10^3$  and  $42 \times 10^3/\text{gm}$ . with an average of  $8.92 \times 10^3/\text{gm}$ . *Strept. intermediate* failed detection in all examined samples. All samples proved to harbour Enterococci (table 3). Similar findings have been reported by MORSHDY (1980).

The presence of Enterococci in any food is indicative of faecal contamination. Moreover the organisms have been isolated from foods implicated in cases of food poisoning.

The unsatisfactory results obtained from examined samples indicates the sanitary neglected measures during processing, storage and handling of the product. More-over, the presence of *Staph. aureus* and Enterococci may, at times, constitute a public health hazard.

Therefore, attention should be paid to the staff of processing plants and sardine handlers as they are the main indirect source of contamination. They should get acquainted with self hygiene. Moreover, maintenance of hygienic standards in processing, storage and handling of the product deems essential.

Table (1): Summarised results of viable counts/gm. muscle

	Minimum	Maximum	Average
Total viable count			
at $35^{\circ}\text{C}$	$4 \times 10^6$	$80 \times 10^6$	$39.42 \times 10^6$
at $25^{\circ}\text{C}$	$8 \times 10^6$	$98 \times 10^6$	$40.50 \times 10^6$
Staph. count	$3 \times 10^3$	$38 \times 10^3$	$9.11 \times 10^3$
Enterococci count			
Streptifaecalis	$4 \times 10^3$	$40 \times 10^3$	$10.50 \times 10^3$
Streptifaecium	$3 \times 10^3$	$42 \times 10^3$	$8.92 \times 10^3$

## SANITARY CONDITION OF SARDINE

Table (2)  
Frequency distribution of samples based on their Staph. count

Interval	FREQUENCY	
	No. of Samples	%
$1 \times 10^3$ — $20 \times 10^3$	14	70
$20 \times 10^3$ — $40 \times 10^3$	6	30
Total	20	100

Table (3)  
Frequency distribution of samples based on their Enterococci count

Bacteria	Intervals	FREQUENCY	
		No. of samples	%
Strept. faecalis	$1 \times 10^3$ - $20 \times 10^3$	16	80
	$20 \times 10^3$ - $40 \times 10^3$	3	15
	$40 \times 10^3$ - $60 \times 10^3$	1	5
Total		20	100
Strept. faecium	$1 \times 10^3$ - $20 \times 10^3$	15	75
	$20 \times 10^3$ - $40 \times 10^3$	4	20
	$40 \times 10^3$ - $60 \times 10^3$	1	5
Total		20	100

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