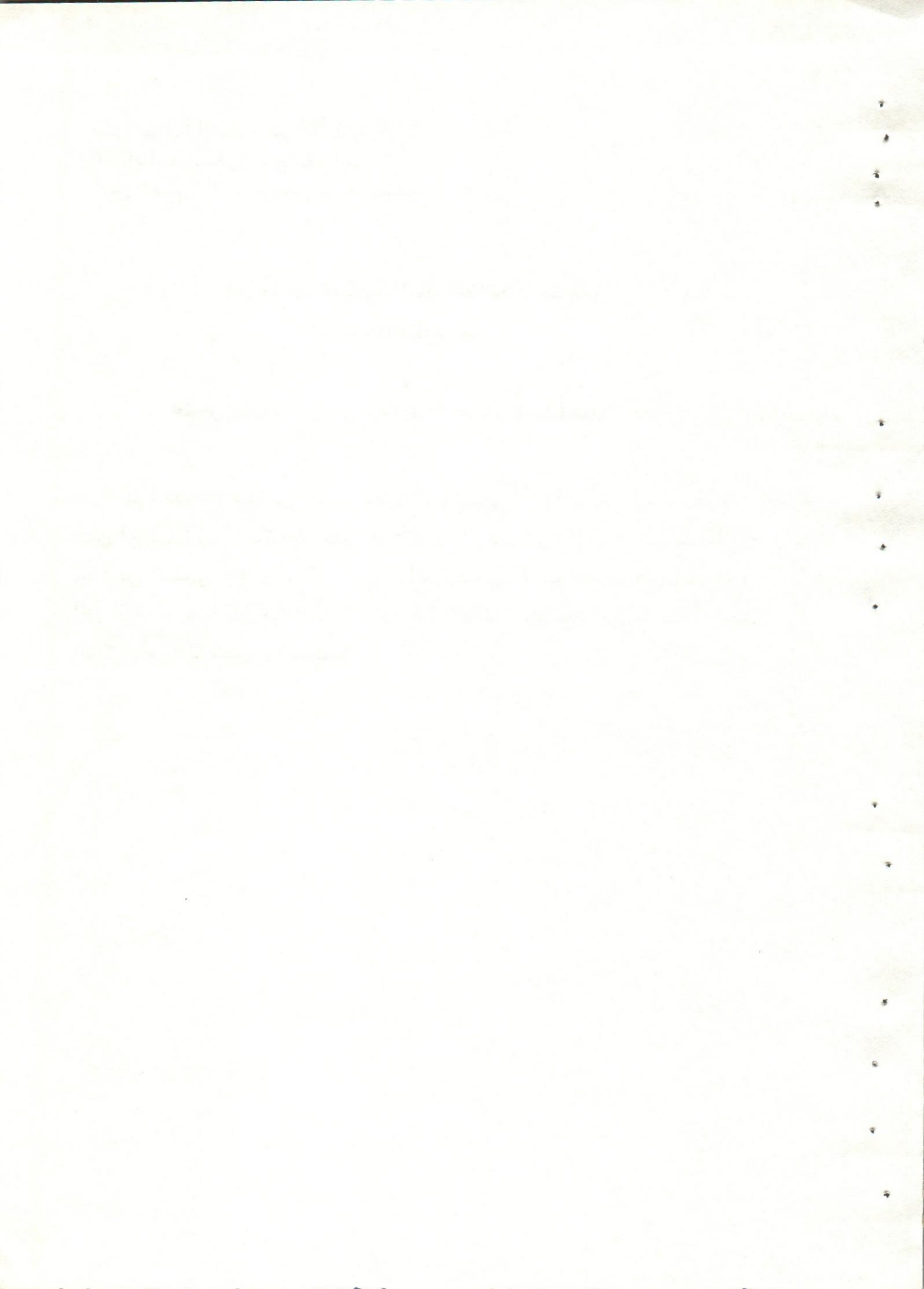


قسم المراقبة الصحية على الأغذية
كلية الطب البيطرى - جامعة أسيوط
رئيس القسم : ا. د / على يوسف لطفى

دراسة عن الميكروب المكور العنقودى الذهبى فى منتجات اللحوم

حسين يوسف ، يحيى حفناوى ، حسنى عبد اللطيف

تم فحص ٥ عينة من اللحم المفرى ، والسجق ، اللانشون ، والبسطرمة ، وقد تبين أن نسبة وجود ميكروب المكور العنقودى الذهبى فى اللحم المفرى بنسبة ٦٠ ٪ بينما فى السجق ٤٠ ٪ ، وكان متوسط الميكروب فى اللحم المفرى 1.4×10^3 لكل جرام ، بينما كان فى السجق ١٥٠ لكل جرام ، ولم يستطع الباحث أن يعزل الميكروب من اللانشون والبسطرمة .



Dept. of Food Hygiene,
Faculty of Vet. Med., Assiut University,
Head of Dept. Prof. Dr. A.Y. Lotfi.

COAGULASE POSITIVE STAPHYLOCOCCI IN SOME MEAT PRODUCTS (With 3 Tables)

By
H. YOUSSEF; Y. HEFNAWY and H. ABDEL RAHMAN
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SUMMARY

Forty five samples of raw minced meat, fresh sausage, luncheon meat and basterma, collected from Assiut city markets, were examined for incidence and colony count of coagulase positive Staphylococci. The results revealed that coagulase positive Staphylococci was more frequently detected in raw minced meat (60%), followed by fresh sausage (40%), while the organism could not be detected in luncheon meat and basterma.

INTRODUCTION

Staphylococcus aureus occupies a unique position among microbial pathogens especially coagulase positive strain, which are the most enterotoxigenic Staphylococci (EVAN & NIVEN, 1950).

CASEMAN *et al.* (1963) pointed that there is little or no growth of *Staph. aureus* in raw ground beef, but when surface of raw and cooked meat were inoculated, good Staphylococcal growth occurred.

Many foods have been implicated in Staphylococcal food poisoning (SHOUP and OBLINGER, 1976; KARIM, 1977; AHMED, 1978; BOUWER, HERTZBERGER, 1982; AL ASHMAWY, 1983; ZEIDAN *et al.* 1983 and ROUSHDY *et al.* 1983).

The present study was conducted to determine prevalence of coagulase positive Staphylococcal in raw minced meat, fresh sausage, luncheon meat and basterma.

MATERIAL and METHODS

A total of forty five samples of raw minced meat, fresh sausage, luncheon meat and basterma, in retail package were collected from Assiut city markets, transferred to the laboratory with minimum of delay, these samples were bacteriologically examined according to the technique recommended by THATCHER & CLARK (1978).

Preparation of samples:

10 g. of each sample were homogenised with 90 ml. of 0.1% peptone water in blender for 2 minutes at high speed. Decimal dilutions of the homogenate were prepared.

Presumptive count:

0.1 ml. of selected dilutions was spread in duplicates, on Baird-Barker medium (Merk, Art. 5406) and incubated at 37 C for 48 hour.

Colonies giving characteristic pictures of Staphylococci on Baird-Barker medium were transferred to slope mannitol salt agar (Oxoid CM 85) and incubated at 37 C for 24 hours.

The average presumptive count/g. meat products was calculated and recorded.

Confirmed count:

Suspected colonies, were inoculated into nutrient broth and incubated at 37 C over night, before being examined as follows:

I - Microscopical examination.

II- Coagulase test: was determined by using Human coagulase plasma after 24 hour at 37 C.

Detection of nitrite:

Nitrite of meat products were detected by Griesllosovay reaction (PEARSON, 1970).

RESULTS

Obtained results showed in tables 1,2 & 3.

DISCUSSION

The obtained results showed that all samples which were positive on Baird-Barker medium were also positive on Mannitol-Salt agar.

It is evident from obtained results in table (1) that coagulase positive Staphylococci could be isolated from 6 samples (60%) of raw minced meat out of 10 examined samples, while in fresh sausage coagulase positive Staphylococci could be isolated from 2 samples (40%) out of 5 samples examined. The results proved that meat and meat products may be considered as a source of coagulase positive Staphylococci. Similar results were reported by JAY (1962) in which 39% of unfrozen meat recovered coagulase positive Staph. aureus. Bouwer-HERTZBERGER (1982) pointed that 6 outbreaks of Staphyloenterotoxiosis due to consumption of meat and meat products had take place, ROUSHDY *et al.* (1983) recorded that minced meat obtained from markets contained 100% coagulase positive Staph. aureus, while YOUSSEF *et al.* (1984) proved that raw minced meat contained 51.7% coagulase positive Staph. aureus.

Raw minced meat and fresh sausage may be subjected to contamination with Staph. aureus at different stages of preparations, poor handling or storage. This is supported by the findings obtained by MINOR & MERTH (1972).

Coagulase positive Staphylococcal count ranged from 20×10^2 to 30×10^2 /gm minced meat with mean value 14.2×10^3 , and from 100 to 200/gm fresh sausage with mean value 150. Nearly similar findings were recorded by ROUSHDY *et al.* (1983) that coagulase positive Staph. aureus ranged from 28×10^2 to 24×10^3 /gm minced meat, while YOUSSEF *et al.* (1984) pointed out that coagulase positive Staph. aureus ranged from 1×10^2 to 26×10^2 /gm minced meat with mean value 4.6×10^2 /gm. However the National Center for Disease CONTROL, 1971 recorded that the number Staphylococcal food poisoning were 1.000 to 100.000 coagulase positive Staph.aureus and upwards to one million/gm in some food poisoning samples, accordingly raw minced meat consider a public health hazard.

Coagulase positive Staphylococcal failed to be detected in luncheon meat and basterma, this may be attributed of that luncheon meat are precooked to various degrees before and during preparation (JAY, 1962). Besides, nitrite was detected in 40.02% of luncheon meat and 80.04% of basterma

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(table 3), and as recorded by CASTELLANI *et al.* (1955) that nitrite had a bacteriostatic action on food poisoning Staph. aureus and related organisms.

In conclusion, raw minced meat is considered as a public health hazard, even if salt is added and the product inadequately refrigerated, the potential would exist for rapid cell replication of enterotoxin producing Staph. aureus. Such a product would remain a potential hazard even after cooking, as Staph. aureus enterotoxin is heat stable (BRYAN, 1968). Although the recorded data in this work considered raw minced meat a public health hazard, yet the extent of presence of Staphylococci enterotoxin in raw minced meat and its stability to thermal processing (time-temperature) during preparation of fried minced meat is still need more studies and clarifications.

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Table (1)
Incidence of coagulase positive Staphylococci
in some meat products

Products	No. of samples examined	coagulase positive Staph.aureus.	
		No.	%
Raw minced meat	10	6	60
Fresh sausage	5	2	40
Lunchon meat	15	0	0
Basterma	15	0	0

Table (2)
Statistical analytical results of coagulase positive
Staph. aureus count/gm of some meat products

Products	Minimum	Maximum	Mean
Raw minced meat	20x10 ²	30x10 ²	14.2x10 ³
Fresh sausage	100	200	150

Table (3)
Detection of nitrite in the examined meat samples

Product	No. of samples examined	Positive samples	
		No.	%
Raw minced meat	10	0	0
Fresh sausage	5	0	0
Lunchon meat	15	6	40.02
Basterma	15	12	80.04