

قسم الصحة ومراقبة الأغذية .
كلية الطب البيطري - جامعة أسيوط .
رئيس القسم : أ . د . علي لطفي .

نسبة وجود الكلوسترديم بيرفرنجنز في منتجات اللحوم في مدينة أسيوط

حسين يوسف

تم فحص عدد ١٠٤ عينة من اللحم المفري ، السجق ،
اللانшон والبسطرمة بكتريولوجيا . وقد تم عزل الكلوسترديم
بيرفرنجنز بنسبة ٧٧٫١٪ من اللحم المفري ، ٢٥٪ من
السجق ، ٨٫٣٪ من اللانшон ، بينما لم يتمكن الباحث من
عزل ميكروب الكلوسترديم بيرفرنجنز من البسطرمة . وكان
احتمالات العدد الكلي للكلوسترديم بيرفرنجنز تتراوح من
١١ الى ٢٠ لكل جرام من اللحم المفري ، بينما كان العدد
الكلي في كل من السجق واللانшон ضئيل . ويعتبر اللحم
المفري مصدر خطورة للمستهلك اذ لم يحضر بطريقة صحية
وتعريضه لدرجة حرارة غير كافية لقتل ميكروب الكلوسترديم
بيرفرنجنز . كما اقترحت التوصيات لدرء الأخطار وحماية
صحة المستهلك .

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**INCIDENCE OF CLOSTRIDIUM PERFRINGENS
IN MEAT PRODUCTS IN ASSIUT CITY**
(With 2 Tables)

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SUMMARY

A total of 104 specimens of raw manufactured minced meat, fresh sausage, luncheon meat and cured meat were bacteriologically examined for *Clostridium perfringens*. The results revealed that *C. perfringens* was more frequently detected in raw manufactured minced meat (77.1%) followed by fresh sausage (25%) and lastly luncheon meat (8.3%). *C. perfringens* cannot be detected in cured meat. Most probable number (MPN) of *C. perfringens* ranged from 11 to 20/g in largest number of raw manufactured minced meat; while in fresh sausage and luncheon meat MPN was significantly low. Raw manufactured minced meat if improperly handled and treated with insufficient heating, provide a mean for transmission of *C. perfringens* to the consumer.

INTRODUCTION

C. perfringens exist in soil, dust, spices as well as intestinal tract of man and other animals. Evidence to implicate food as a potential sources of *C. perfringens* has been presented by number of workers (SELIGMAN, 1971, DOBBERTIN and SIEMS, 1975, EL-BASSIONY, 1980 and BOUER-HERTZBERGER 1982).

Investigation of *C. perfringens* in raw meat and meat products was recorded by many investigators. HOBBS *et al.* (1953) detected heat-resistant strains of *C. perfringens* in 14-24% of samples obtained from veal, beef and Pork; STRONG *et al.* (1963) recorded the isolation of *C. perfringens* from 16.4% raw meat, poultry and fish. HALL and ANGELOTTI (1965) succeeded in isolating *C. perfringens* from 58% of meat and 19.8% of meat dishes. LADIGES *et al.* (1974), registered that the incidence of *C. perfringens* in ground beef was 47.4%, while SHOUP and OBLINGER (1976) stated that less than 50 *C. perfringens* were found in 30 samples of retail ground beef. FOSTER *et al.* (1977) pointed that raw ground beef contained 56% *C. perfringens* with a mean value 55 organism/g., FRUIN (1977), was able to isolate *C. perfringens* more frequently from veal (82%) and lambs (52%) than from luncheon meat (1%).

This study was planned to determine the incidence and enumerate *C. perfringens* in raw manufactured minced meat, fresh sausage, luncheon meat and cured meat common available in Assiut City (Upper Egypt).

MATERIAL and METHODS

A total of 104 samples of raw manufactured minced meat; fresh sausage; luncheon meat and cured meat, in retail package were collected from the Assiut City markets.

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Raw manufactured minced meat usually prepared by mincing the meat after mixing with onion, spices and other greens; where there after is exposed to frying process.

The method adopted in this work was carried out according to BEERNES et al. (1980).

Enumeration of *C. perfringens* was determine by referring the combination of positive tubes to MPN table consulted by DE MANN (1977).

RESULTS

The results are tabulated in tables I and II. As shown from table I, *C. perfringens* were detected in 58 (55.8%) out of 104 samples of meat products including 70 raw manufactured minced meat, 12 fresh sausage, 12 luncheon meat and 10 cured meat.

DISCUSSION

The incidence of *C. perfringens* in raw manufactured minced meat, fresh sausage and luncheon meat was 77.1%, 25% and 8.3% respectively. On the other hand, *C. perfringens* failed detection in any of the cured meat samples. Similar results were previously recorded by many other workers as LADIGES et al. (1974), and FOSTLER et al. (1977). On the other hand, a lower incidence of such pathogen was obtained by STRONG et al. (1963) and HALL and ANGELOTTI (1965). However the high incidence of *C. perfringens* in the examined raw manufactured minced meat may be partly attributed to infection of meat itself (HOBBS et al. 1953, STRONG et al. 1963, HALL and ANGELOTTI 1965, BRYAN and KILPATRICK 1971, LADIGES et al. 1974, FOSTER et al. 1977 and FRUIN 1977). Moreover, the addition of spices which is suspected to be heavy loaded with spore of *C. perfringens* might also be considered as a source of contamination of the meat products with such pathogen (STRONG et al. 1963 & DE BOER and BOOT 1981).

C. perfringens was recovered from fresh sausage and luncheon meat representing 25% & 8.3% respectively. Such incidence was lower than that previously recorded by HALL and ANGELOTTI (1965) who registered the isolation of *C. perfringens* in 47.6% of various sausages. However the low incidence of *C. perfringens* in our meat products may be partly attributed to the method adopted in preparing such products.

As shown in tables I and II, *C. perfringens* failed detection in any of the cured meat samples examined, the finding may related to the high salt content and low water activity of such products. The high temperature used in processing this product may also be sufficient to destroy vegetative cells.

The highest number samples of raw manufactured minced meat had MPN ranging from 11 to 20/g. The highest number detected was 50/g. (Table 2). The findings agree more or less with that previously reported by HALL and ANGELOTTI 1965, LADIGES et al. 1974, SHOUP and OBLINGER 1976 and FOSTER et al. 1977.

Consequently isolation of *C. perfringens* from meat products is of great hazardous. The probability of food borne illness may occur to human being due to consumption of such products (JAY 1978 and BOUER-HERTZBERGER, 1982). However, contamination of raw manufactured minced meat with *C. perfringens* may be controlled by applying good basic food hygiene through, minimising contamination, by cleaning and maintaining raw manufactured minced meat below the temperature at which *C. perfringens* growth occur. The heat preparation (time-temperature factor) may also be suitable for retarding the multiplication of *C. perfringens*.

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Table (1)
Incidence of *C. perfringens* in meat-products

Product	No. of samples	Positive		Negative	
		No.	%	No.	%
Raw manufactured minced meat	70	54	77.1	16	22.9
Fresh Sausage	12	3	25	9	75
Lunchon meat	12	1	8.3	11	91.7
Cured meat	10	0	10	10	100

Table (2)
Range of MPN of *C. perfringens* in meat products

	Number of samples containing <i>C. perfringens</i>			
	Raw manufactured minced meat	Fresh Sausag	Lunchon meat	Cured meat
Below 0.3	16	9	11	10
0.3 - 10	12	3	1	-
11 - 20	21	-	-	-
20 - 29	18	-	-	-
29 - 50	3	-	-	-