Salmonella, , Klebsiella, Proteus, Escherichia coli, Staphylococcus c, Streptococcus pyogenes, Pseudomonas aeruginosa

We isolated from the fresh local beef samples 59 bacterial isolates and obtained the same variety obtained from the sheep meat and from the results of the microbial tests; the highest bacterial isolates were found to be local fresh beef samples, while the germination rate of the sheep meat was the lowest. These results indicate that fresh red meat carries on its surfaces after being brought from the slaughterhouse to the shops and markets of the sale of large numbers of microorganisms that cause many risks to public health, and act as nurses for the person who deals with them.

key words:Salmonella.spp , red meat, microbial pathogens Food safety

عزل وتشخيص بعض أنواع التلوث البكتيري الممرض من اللحوم الحمراء في المحلات التجارية والأسواق في محافظة ذي قار

عذراء عودة حسين

كلية العلوم – جامعة ذي قار

الخلاصة

جمع من محلات بيع اللحوم في محافظة ذي قار ، عشوائياً؛ وذلك بعد تطبيق الإجراءات التطهيرية والتعقيمية الممكنة مقدار 100 عينة لحم طازج، من ذبائح الابقار والاغنام محلية، وأختيرت العينات من أجل الكشف عن بعض الجراثيم الممرضة التي ممكن ان تتواجد في اللحوم الحمراء الطازجة مختبريا وتصنيفها بالطرائق الأحيائية المجهرية Microbiological methods المطبقة بشكل عام.

عزلت من عينات لحوم الأغنام الطازجة 56عزلة جرثومية , صنفت إلى أجناس وأنواع الجراثيم الاتية :

السلمونيلا ،Salmonella, الكلبسلة ،Klebsiella, المتقلبة Proteus , الإشريكية القولونية Escherichia coli , العنقودية الذهبية Staphylococcus aureus , عقدية المقيحة ،Streptococcus pyogenes , الزائفة الزنجارية Pseudomonas aeruginosa

كما عزلت من عينات لحوم الأبقار الطازجة المحلية 59 عزلة جرثومية وحصلنا على نفس الاتواع التي حصلنا عليها من لحوم الاغنام ومن نتائج الاختبارات الجرثومية؛ تبين أن أعلى نسبة عزل جرثومي كان من عينات لحوم الابقار الطازجة المحلية في حين كانت نسبة العزل الجرثومي من لحوم الاغنام هي الادنى

وهذه النتائج تشير إلى أن اللحوم الحمراء الطازجة تحمل على سطوحها بعد جلبها من المسالخ إلى المحلات وأسواق البيعأعداداً كبيرةً من الأحياء المجهرية التي تسبب مخاطر كثيرة على الصحة العامة،وتعمل كممرضات للإنسان الذي يتناولها.

Introduction.

The internal parts of healthy meat contain some microorganisms or may not contain any of them. This is confirmed by the isolation of Streptococcaceae, Staphylococci, Salmonella and other lymph nodes of the red meat of different animals . **(Osama and Gehan, 2011).**

The process of slaughtering carcasses takes place during the process of bleeding, the treatment of carcasses and their washing with water, while cutting, packing and shipping them, thus increasing the growth of the microorganisms on the surface of the meat and increasing its activity**.** (Unc and Goss, 2004; Biswas et al., 2011).

It was found that any species of microorganisms on the surface of the meat and the number of them are related to the speed of meat damage in addition to the characteristics of each specific product, and the surrounding conditions have a role in the type of damage speed and degree of damage itself.(Biswas et al., 2011; Omuruyi et al., 2011).

It was found that any type of animal biology on the surface of the meat and the number of them are related to the speed of meat damage in addition to the characteristics of each specific product, and the circumstances that have a role in the type of damage speed and the same degree.It has been suggested that common microorganisms that cause damage can already exist in small numbers and in much smaller numbers than other developing species because of inadequate conditions.(FAO/WHO, 2013). Fresh meat is a product that does not contain saline, caterers or preservatives and is not in fact subjected to heat treatment, it is prepared to invade different microorganisms. Therefore, the meat must be kept in adequate cooling until marketed, and in good health conditions. (Prince and Maalekuu,2014)

Gluten or sticky matter on meat and meat products, especially those that have been on the market for a long time, can be caused by the overgrowth of almost any microorganism; in particular, some species of Pseudomonas, which cause viscosity or unpleasant odors during full storage. The Complete (Adzitey *et al.*, 2011).

The rapid cooling of meat and its products to zero degrees leads to the death of moderate germs that are able to grow rapidly at moderate temperatures. The harmful germs may include all pathogens, microorganisms that are most disruptive and cause food corruption. Microspheres are Gram negative, microscopic microbes most susceptible to cold, and are more susceptible to microorganisms than Gram positive genes (Okonko *et al.*, 2010).

Research Objectives

- .Identification of the most important methods of contamination of fresh meat and identification of microorganisms that can contaminate these fresh meat after the slaughter of animals and during the periods of transport of these meat and display and sell in the markets.
- Isolate these microorganisms and determine their phenotypes and types.
- A reference to the slaughterhouse environment and meat-selling locations of microorganisms can contaminate fresh meat

Materials and methods

samples collection:

The samples were collected for seven months from October to April and from different parts of ThiQar,areas 100 samples were included, 70 samples of beef and 30 sheep meat samples.

Culture of samples

three gram of each sample was taken and the external surface was burned to its estimate and then part of the outer surface was remove and then a portion of the outer surface of the inner surface was removed and placed in 100 ml of soybean medium. 1% Yeast extract and 3g were added to the center of Tetrathyonate broth. At 37 ° C for 24 hours and then planted on the macaroni agar Mannitol salt agar, Kanamycin sodium azid, Listeria agar, and Eosin methyline blue and incubated at 37 ° C for 24 h. When bacterial growth occurred, depending on colony characteristics , Biochemical tests were carried out for the final diagnosis, according to (Konema*net al.*, 1992; Betty, *et al.*, 2007). Agencies And included:

A) Oxidase Test

This test was carried out by taking a sample of the growing bacterial plant on the center of the fed nutrient. The 24-hour colonies were developed by sterile wooden sticks on a filter paper wet with the oxidase detector. The appearance of violet indicates the positive examination.

- Examination of the susceptibility of bacteria to Indole production test

The test was carried out by piping the peptone water with bacterial isolates. The tubes were incubated at a temperature of 37 ° C for 24 hours. After that, a drop of Kovac's reagent was added.

- Methyl Red Test

The red center of the Fox Procacure was vaccinated with bacterial isolates and incubated at 37 ° C for 24 hours and then 5 drops of red-to-medium and red-light reagent were added..

-Voges-Proskauer Test

Fuchs Prusscourt was perfected with bacterial isolates and incubated at 37 ° C for 24 h. After that, 6 drops of reagent A and two drops of reagent B were added to the growth in the MR-VP medium and mixed well. The appearance of pink color indicates a positive examination..

-Utilization Test)(Citrate

This test was carried out by transferring part of the growing bacterial plant to the center of the nutritious nut at 24 hours, by means of a sterile needle to the oblique Simon Citrate slant, and to be

stitched and bent on the slanted surface and incubated at 37 ° C for 24 hours. The color of vegetables to blue is a positive sign of this assay.

- Urease Production Test

The tubes containing urea were vaccinated with bacterial isolates and incubated at 37 ° C and for 24 hours, changing the color of the medium to pink indicates the productivity of the bacteria for the urease enzyme.

-Motility and Mannitol Fermentation Test

This test was carried out by transferring part of the growing bacterial plant to the center of nutritious feed and 24 hours by needle to the semi-hardened Mannitolacar medium and implanted in a 37 ° C incubator for 24 hours. Changing the color of the medium to yellowand the spread of growth and appearance around the area of the challenge gives a positive examination

.

- Test fermentation of sugars and production of CO2 and H2S

A kligler calcareous iron was injected with the bacterial isolates in a catheter pattern and incubated at 37 ° C for 24 h. The presence of H2S was investigated. A black deposit in the bottom of the tube and CO2 was formed by the emergence of the bubbles. The color change of the medium to yellow indicates glucose and lactose sugar fermentation.

The diagnosis was confirmed using several 20E APIs containing 20 biochemical tests and approved by WHO.

Results And Discussion

The results showed that there was a bacterial contamination of seven bacterial strains that were isolated and diagnosed in the fresh meat of the sheep and beef as well as in the table:

Table(1): Total Percentage of some Bacterial Isolates from sheep meat and beef.

sheep meat 30 sample		Beef 70 samples		Type of germs
%	Isolates	%	Isolates	
23	7	1.57	11	E.coli
13	4	14.2	10	Proteus spp

50	15	12.8	9	StaphSylococcusaureus
46.6	14	7.1	5	Pseudomonas aeruginosa
23.3	7	8.5	6	Salmonella spp
20	6	20	14	Streptococcus pyogenes
10	3	5.7	4	Klebsiella spp.
	56		59	Total isolates

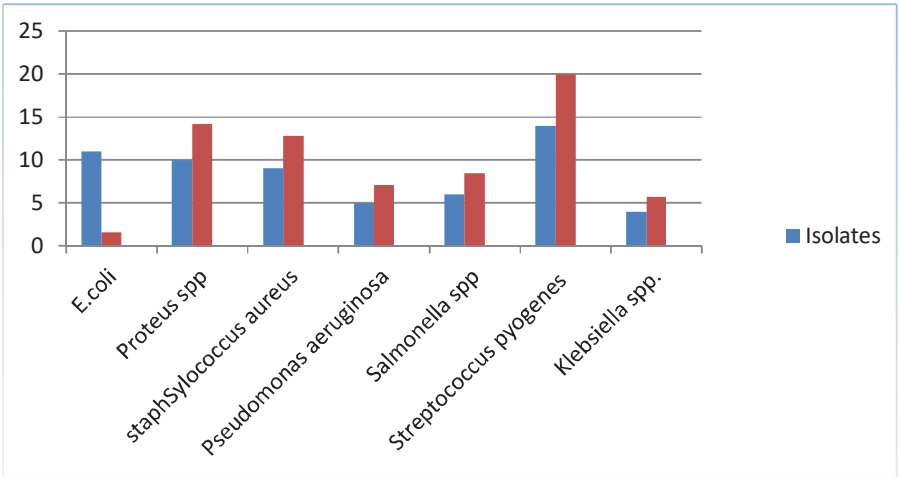

Figure (1) Number of isolates and their types in fresh beef meat

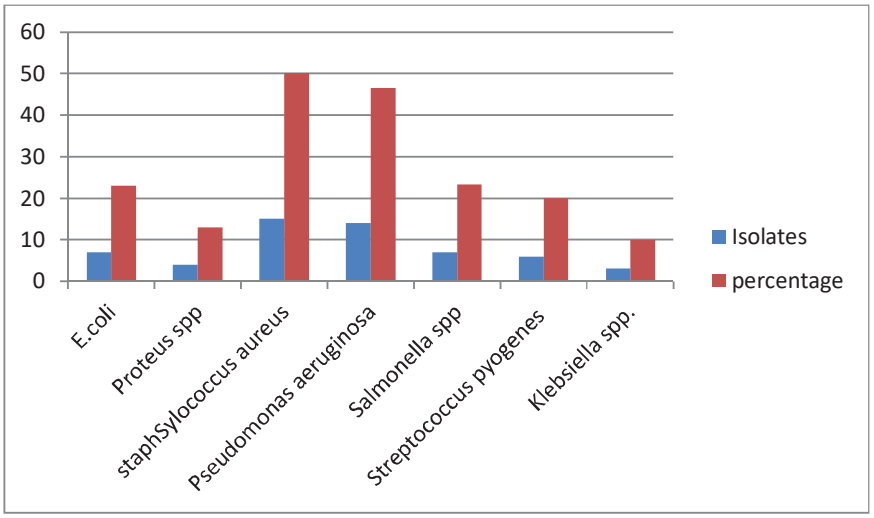

Figure (2) Number of isolates and their types in fresh sheep meat samples

The results of this study showed the presence of seven bacterial strains in soft red meat (Beef and Sheep) in different regions of ThiQar. The results showed contamination of beef with E. coli with the highest percentage of 1.57% while in sheep meat was 23 % E. coli bacteria by researchers without reference to isolation rates The isolation ratio of beef compared with local study is much lower than the isolation rate reported by the researchers (Aseel *et al*., 2010). Perhaps the high rate of isolation of beef shows us that these germs may be one causes of diseases of food poisoning, infectious diseases and urinary infections in humans that Salmonella was isolated from beef meat by 8.5 %, a small percentage compared with the percentage obtained by researchers (Jamil Hussein ,1986)and (Nevry, 2011**)** while the ratio was compatiblewith that obtained by (Zhao, 2001) with 1.9% in beef. Salmonella was isolated from sheep meat by 23.3%, in comparison with local studies, the percentage of contamination shown by this study was identical to that found by.(Aseel *et al*.,2010),(Ali *et al* .,2010) and),(Hadad andJemel, 1985) in The sheep carcassesin Mosul, but higher than the isolation rate found by (Soad, 2013) and (Abdal-Kaeim, Faraj, 1983) . It was 2% in sheepcarcassesin Baghdad**.**

The results showed that isolates of Pseudomonas aeruginosabacteria, which amounted to7.1 % in beef and 46.6 % in sheep meat, in the butcher shops. It is not surprising that these germs make up a large proportion of all the bacteria that have been isolated. It is known that cultivars, usually predominate in preserved beef at 10 $^{\circ}$C or lower and denominations, (Vignesh *et al*.,2018) and (Westhof and Frazier,1978). In our research, the ratio of isolation is compatible with researche (Aslam,Service, 2008**)** while not matching the researchers (Al-Talhi and Al-Kahran 2005).

Staphylococcus bacteria were found to be12.8 % in cow meat and 50% in sheep meat. (Bhandare *et a*l., (2007) reported the prevalence of bacteriostatic bacteria in slaughterhouses and kasaba store. These percentages are much lower than those found in local studies (Aseel, *et a*l., 2010).

Isolation ratio of Klebsiella sp. Which we obtained in beef was 5.7% and in sheep meat was 10%. The result we obtained in our research corresponds to what the researcher found (Vignesh *et al.*,2018) and(Refaie *et al*., 1991). While the researcher (Zena, 2007) obtained a high percentage of isolation of these bacteria, which we have reached from the percentage of insulation does not match this researcher. The reason is the rise of temperature and exposure of meat to the air and to various types of bacteria, And because of poor storage before the examination, as the meat is a good medium for the growth of microorganisms because they contain high humidity because they contain the nutrients necessary for the growth of most microorganisms

(Keshab, 2015).

. Staphylococcus aureus was isolated by 5.18% of beef and 3.85% of sheep meat compared with local studies (Asee l*et al*., 2010) and (Farzad 2012) while the percentage was higher than that obtained (Iroha *et al*., 2011), (wartkruis *et al.*, 2008, And Erdogrul,2005). The contamination of carcasses by bacteria from Staphylococcus aureus is caused either by the animal itself or by the hands of the cutters. Therefore, intensifying the awareness of health, care and cleanliness during the circulation of meat is important to reduce pollution. The difference in the isolation rates of the different bacterial species may be due to the extent to which the health conditions applied everywhere, the nature of the production and its intensity, and according to the country's technical development or its backwardness, and through this study we observed the non-typical reality of slaughter sites and avoided the most basic health ingredients.

From this study we can conclude that most pathogens that play a role in foodborne diseases have an animal origin. It can be concluded that organisms, such as Escherichia coli, Klebsiella sp., and others, were the most common microorganisms in meat samples. Although there is no such concentration, they are important microbial contaminants in red meat, which should be taken care of in order to prevent health risks To consumers through the adoption of appropriate sanitation, storage and retail practices. Markets in terms of meat collection were mostly unhealthy. There were no proper disbursement systems in most areas. Most markets are open without proper stores. There were no cool storage systems in the market. All these conditions provide an appropriate environment for meat contamination, growth and multiplication of various microorganisms including pathogenic organisms, taking into account the appropriate temperature, humidity and availability of nutrients from meat samples themselves. This has a clear effect from a public health point of view. The results

indicate that there are large quantities of microbial contaminants in beef meat and sheep meat in open markets where there is a lack of proper health awareness in the markets.

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