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Original Article

Identification of Some Fungi in Local Frozen Chicken Meat Samples Obtained From Markets of Babylon Province, Iraq

Ali Hadi Almamori[1] | Abbas.K.Almansoori[2] | Ahmed Obaid Hossain[3] | Hider M. H. Al-Shirifi[4] | Fatima ABD-AL-RADHIA[5] | Hassan Jabr Lafta[6] | Aya saad kadhim[7] | Anwar Nasser Hussein[8] | Amjad Mahdi Khadim[9] | Youssif jabbar sharhan[10]

[1,3,5,6,7,8,9,10]AL-Qasim Green University, Faculty of Biotechnology, Department of Medical Biotechnology, Iraq.

[2]AL-Qasim Green University, Faculty of Biotechnology, Department of Applied Biotechnology, Iraq.

[4]Al-Qasim Green University, Faculty of Environmental Sciences, Environmental health Department, Iraq.

Abstract

Frozen chicken meats are consumed by people everywhere. We aimed to look at major fungi in frozen chicken meat samples that were sourced from local markets in Babylon Province/Iraq. Three dozen chicken samples from the market were used to detect both kinds of bacteria and fungal organisms. First, the samples were cultured on blood, nutrient and potato dextrose agar and positive cultures were examined on blood agar using the lactophenol technique for fungal identification. The researchers discovered E.coli bacteria in three background samples and Aspergillus niger and pencillium nordicum fungi in five background samples of the thirty ones studied from stores.

Key word: Aspergillus niger, pencillium nordicum, Local Chicken Meat.

Introduction:

meat spoilage makes a piece of meat unfit for anyone to eat directly. Many outside elements play a role because of the product's type and the way it is handled and stored after production. Each year a third of the food meant for human use is lost because of spoilage [1]. It is bacteria and some fungi that spoil food and can endanger people, but there are ways to stop it. Bacteria in some cases cause food spoilage. Bacteria converting food causes the production of acids and waste products [2]. Bacteria could be helpful or not, but the things it releases could bother your taste or be unsafe for your health [3]. Certain pathogenic bacteria livest in various parts of different foods. For example, clostridium botulinum causes meat and poultry to spoil and bacteria called bacillus cereus spoils just about all foods. Under poor storing conditions such organisms multiply quickly and can release poisons that lead to serious illness, even after the food is correctly cooked [4]. Although fungi are usually only thought to make food unsightly, they

have been found to be a leading cause of many fatalities. Fungi result from acid-forming, fermentation, discoloring and disintegration and may cause different colors of fuzz, powder and slimes, some of which are black, white, red, brown and green [5]. Although mold is a form of fungus, the two are not exactly synonymous, since each one is defined and acts differently [6]. There are many famous molds such as Aspergillus and Penicillium, all of which create a rough coating, powder and slime in different colors [1]. Yeast is a fungus that forms on meat . Since yeast multiply more slowly than bacteria, it is often outnumbered in areas rich with bacteria [6]. The same benefit is seen in making various food and drink products such as bread, yogurt, cider and alcohol [7].

Materials and Methods:

1-Collection of Samples

Markets in the Iraqi province of Babylon provided the frozen chicken samples. For future usage in the lab, the samples were placed in the refrigerator.

2-Identification of Bacteria

Bacteria in the sample were detected using gramme stain, blood agar, and nutrient agar. A sterile mortar and pestle was used to smash one gramme of each sample on top of nine millilitres of distilled water. Then, the mixture was serially diluted, and finally, 0.1 millilitres of the sample was added to appropriate culture media. The mixture was then incubated at 37oC for one day. Biochemical assays and microscopic analysis were used to identify the isolates. Following inoculation into Nutrient broth, the colonies were incubated at 37 ºC for a duration of 24 hours. The morphological and biochemical traits of the organisms were also determined using the test sample [8].

3-Biochemical Tests

The following biochemical tests were used to diagnose bacteria in frozen imported meat samples: ss agar, H2S, Indole, Methyl Red, Vogues Proskauer, Citrate utilisation, Triple Sugar Iron, Oxidase, Catalase, and Urease.

4-identification of fungi

The types of fungi in sample was identify according on :

A- Potato dextrose agar medium (PDA) .

Follow the package directions for preparation by adding 1000 ml of distilled water to 39 g of the prepared medium and autoclaving it as before. After that, autoclave the medium for fifteen to twenty minutes at 121 degrees Celsius and fifteen pounds per square inch of pressure [9, 10]

B-Direct microscopic examination:

For microscopy, a small section of the sample was placed on a slide that was free of oil. To test for the presence of fungal elements, the specimens were wet-prepped with KOH at concentrations ranging from 10% to 20%. To check for fungal hyphae, the prepared slide was further inspected using low (10x) and high (40x) objective lenses. Fungal hyphae are characterized by hyaline, wide aseptate branches that angle at 90 degrees [11].

Results:

1-Identify of bacteria:

One type of bacteria and two types of fungi were identified in this study. Among the bacteria, three out of thirty local frozen chicken meat samples (or 10%) were found to be Escherichia coli. This was achieved through a series of methods, the first of which was dilution up to 10-1 to 10-8 for the frozen chicken sample. Another sample, crushed with peptone water, was also identified as having Escherichia coli. Finally, EMB agar was used for the isolation of colonies that were suspected of being Escherichia coli.

2- Antibiotic Susceptibility test :

By comparing the antibiotics' zone of inhibition diameter to the organisms' sensitivity ranges, the Kirby-Bauer disc diffusion method was used to evaluate the antibiotics' effectiveness. In order to identify microorganisms in frozen chicken based on biochemical and morphological properties, test organisms including Staphylococcus aureus and Escherichia coli were cultured on an agar slant. The resulting isolates were then employed for this purpose (Table - 1). You may find the results of

the antibiotic sensitivity test in (Table - 2). Staphylococcus aureus and Escherichia coli were the bacterial species found in the frozen chicken pieces.

Table -1- Isolation of bacteria species in frozen local chicken meat

Biochemical test	Escherichia coli
Gram stain	-ve
Shape	Rod
Motility	+ve
Indole	+ve
Methyl Red	+ve
Tripe suger Iron	+ve
Voges proskauer	-ve
Colony	Green metallic

Table -2- Antibiotics susceptibility test

Antibiotic	E.coli
Gentamycin	2-2.5
Tazobactam	1-1.5
Erythromycin	-
Ampicillin	1-2

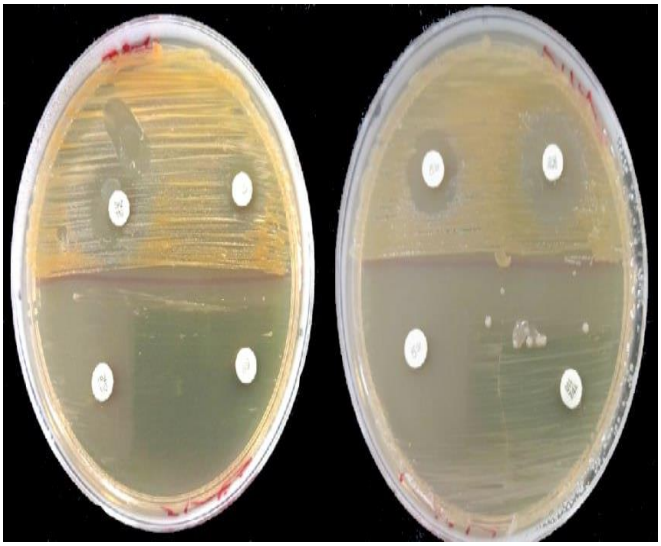

Figure (1). Antibiotics susceptibility test

From a total of thirty samples, two species of fungi—Aspergillus niger and penicillium expansum—were found in the frozen local meat chicken. Figures (1) and (2) displayed these findings.

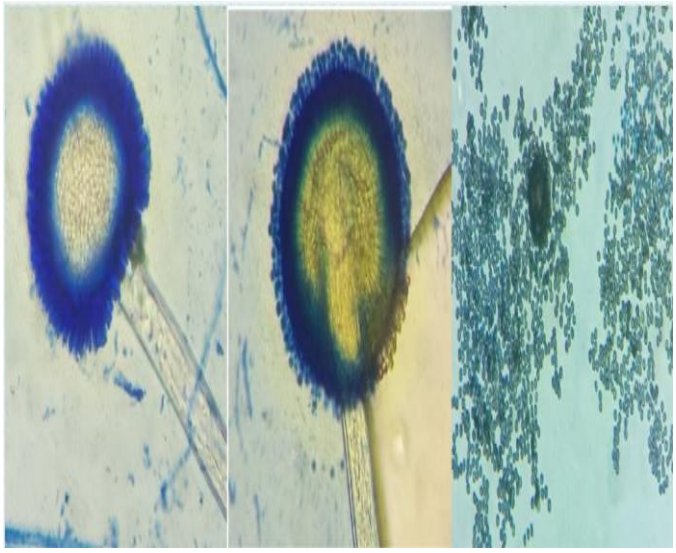

Figure (1) Aspergillus niger in frozen local chicken meat samples .

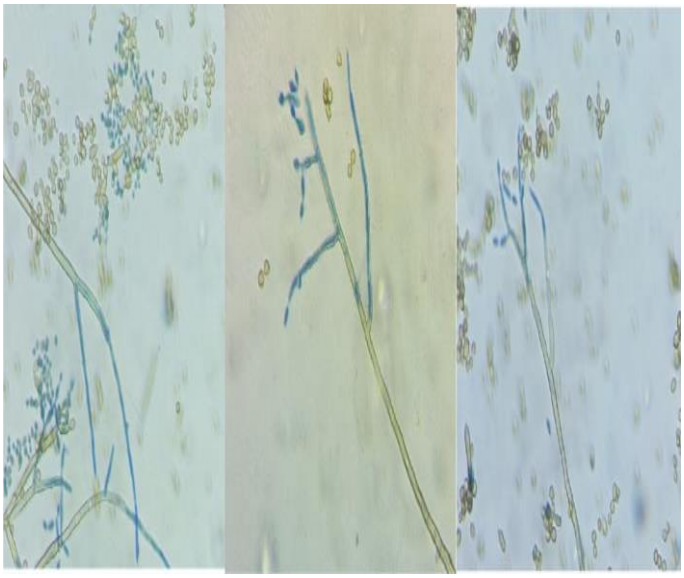

Figure (2) penicillium expansum in frozen local chicken meat samples .

Discussion:

The untreated meat will decay in a few hours or days, turning it into something that no one wants to eat and maybe even harmful or contagious. Bacteria and fungi inevitably infect and decompose meat; these pathogens can be carried by animals, humans, and the tools used to handle meat, leading to spoilage. With the right hygiene practices during processing and production and the use of suitable food preservation, storage, and safety protocols, meat can be kept edible for a considerably longer period of time, though not forever [10]. Most microorganisms, including

bacteria and fungi, are responsible for meat deterioration. Two fungus and two bacteria were identified as spoiling poultry meat in this investigation. Among the bacteria were Gram-negative, rod-shaped ones that don't produce spores. These microbes are known to cause food poisoning and gastrointestinal problems in both people and animals [11]. Important genera in poultry illnesses. The study's findings demonstrated that at various stages of processing, local chicken meat might become contaminated with bacteria and fungi. Because of the high surface area exposed, the abundance of water and nutrients, and the increased oxygen penetration that causes meat to decay, retail cuts may also increase the microbial burden. infections caused by zoonotic bacteria that can be found in meat, including E. coli enteritis and Staphylococcus food poisoning. Anyone who has eaten tainted meat has likely encountered the fungi Aspergillus niger and pencillium expansum. Regarding the microbiological characteristics, storage life, and food safety of commercially sold chicken meat in Babylon province, Iraq, very little is known. Poultry raised and processed in a Babylonian environment with high levels of early contamination would be on display until it was sold to consumers as retail meat. Because of this, meat sold at retail stores would have all the germs and fungus that are already in the meat as a result of infection or those are introduced during handling, incorrect dressing, cleaning, unclean circumstances, or purchasing the meat. Assurance after microbial load evaluation is considered required to promote meat quality. [12] This led researchers to look at the microbiological state of fresh chicken, which may indicate how clean the meat is and whether or not it poses any risks to the general population. Additionally, drug-resistant bacteria can be found in chicken meat. Chicken meat contaminated with antibiotic-resistant bacteria, such as E. coli and Salmonella, is a growing public health problem because of the risk of disease transmission to humans [13]. Cases of gastroenteritis and other food-borne illnesses have been linked to the majority of these genera, making them known to be of public health concern [14]. People handling the products often don't follow proper hygiene protocols, which can lead to environmental hazards and contaminations that occur during cross-processing [15,16].

Conclusion:

There are a lot of bacteria and fungus that can thrive in chickens. The current study aimed to identify and isolate the microorganisms present in frozen local chickens. It was found that the load of bacteria and fungi in fresh local frozen samples of poultry is relatively slow. This could be due to factors such as environmental contamination, improper handling, washing the meat, transportation, and storage. The microorganisms were not only quantified, but also defined.

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