



## Study and Identification of Fungal and Bacterial Causing Contamination of Some Local Dairy Products in Basra City of Iraq

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**Abstract:** Background: This study was conducted on some microbial contaminants of white cheese and its derivatives circulating in the markets of the city of Basra, specifically the popular areas, and assessing their health through their compliance with health standards.

Aim of study : Studying and identifying the fungal and bacterial that cause contamination of some local dairy products and ways to prevent them.

Results: : Results: 2 types of bacteria were isolated and diagnosed, and 3 types of fungi were isolated from local dairy products. 11 out of 20 samples were contaminated with bacteria. 45% of the bacteria isolates were Gram-negative and 55% were Gram-positive.

Bacteria isolates *Escherichia coli* , *Staphylococcus* and *Alternaria alternate* , *Aspergillus niger* , *Candida albicans* predominated in all products.

This study shows that the local dairy products that were studied were contaminated with pathogenic microorganisms, during the study period from (January to March) 2023.

Conclusion :Fungi and bacteria were detected in cheese and dairy products in the city of Basra and its affiliated regions, where the highest percentage of *e.coli* bacteria was recorded, followed by *Aspergillus niger* and others.

in all samples examined. Which are considered dangerous pathogens that require high health control and sterile industry, preventing the sale of milk exposed to dust and dirt, product packaging, and checking the date of production.

**Keywords:** *E.coli*, cheese products, *Aspergillus niger* , *Staphylococcus aureus*, *Candida albicans*

### Introduction

Dairy derivatives and cheese play a very important role in nutrition in different diets. Preparing milk and cheese, manufacturing them, and selling them in the markets is considered one of the traditional methods in the Basra community, whose residents today depend on milk, cheese, and their derivatives for nutrition and obtaining a source of calcium)Quigley L, O'Sullivan O, Stanton C.FEMS Microbiol. Rev. 2013.(Most products are considered an ideal medium for the growth of fungi and bacteria, which are the main cause of food poisoning and diarrhea, as dairy products spoil quickly in the hot climate that characterizes Basra city. ( Cream Suhad Khudair College of Agriculture - University of Baghdad). Due to the moisture content of cheese, dairy and their derivatives and the presence of many necessary compounds such as hydrogen, nitrogen and

carbohydrates, cheese is considered an ideal medium for the growth of microscopic organisms.(Al-Saadi, Amal Taleb Attia Al-Qadisiyah (2003).

The cream Arab Qamar is distinguished by its harm and being a good medium for the growth of germs, and it is an important source of food poisoning and diseases that are transmitted secretly(Jackson,A.Ce1978). Local soft cheese and local cream contain plant cells of different types of microorganisms, aerobic and anaerobic bacteria spores, yeasts and molds in large numbers due to contamination of milk during its production and processin). Assen, H.A.L. 2002) . Therefore, the study came with the aim: to give a picture of some microbial contaminants of local soft cheese and local cream.( Eaton, D. L. Gallagher, E. P(1994).

There are several factors that contribute to the development of spoilage in milk and cheese, including raw milk and the heat treatment mechanism, in addition to the hygiene conditions in the factory, the cleanliness of the workers themselves, the storage areas, the storage mechanism, places that sell dairy products, and the humidity level. (Wahba, Nahed Muhammad Al-Nisr, Nevine Abdel-Ghany (2010). Through previous experiments, it has been shown that fungi and bacteria cause major problems in economic loss due to their direct impact on spoilage of milk and cheese on a daily basis. Therefore, it is important to monitor the work of factories and employees of dairy and cheese derivatives, as well as sellers in markets, and to maintain pasteurization of milk periodically. )Al-Samarrai, Abd al-Wahhab Mahdi and Mahmoud Abd al-Omar1984 (.The problem of contamination of raw milk with fungi is common )Yaseen, 2002 (.

### **Material & methods:**

1-Cultivation media

McConkey agar

Trypton agar

Blood agar

Nutrient agar

Chocolate agar

SDA

2-Wire Loope

3-Bernner

4-Cheese and dairy samples

5-Alcohol

6- Incubator

7-Gram stain

### **Sample collection and processing:**

For bacterial and fungal analysis, a total of 20 cheeses were collected from different regions in Basra city. This sample was collected early in the morning and at night using a sterile glass vial. After that, the samples were properly classified, stored at +4°C, the samples grown in the culture dishes and then incubated at a temperature of 37°C for 24 hours and by sterile wire loop take small Colonies put on a clean slid and staining with gram stain and leave the smear to dry in air and exam under the oil Immersion objective lens



### Result & Discussion:

After culturing the samples in the culture dishes, the results of the microscopic examination showed the presence of two types of bacteria causing contamination of dairy and cheese products in the city of Basrah ( *Staphylococcus aureus* & *Escherichia coli* ). & presence of 3 types of fungi *Aspergillus niger*, *Candida albicans*, *Alternaria alternata*.

Twenty samples of dairy and cheese products were collected in Basra city for the purpose of this Study and identification of microorganism causing contamination of some local dairy products in Basra city southern Iraq.

No	sample number	The place of sampling
1	1,2	Al-Ashar –ducker
2	3,4	Al-Ashar area, Abu Al-Aswad Street
3	5	AL-midaina district
4	6,7	Qurna district(1)
5	8,9,10	AL-Basrah qadimah
6	11,12,13	Qurna district(2)
7	14,15,16	Zubair - Waqf market
8	17,18	Five mile area
9	19,20	Shatt al-Arab district

Table No. 1 shows the areas in Basra city from which samples were taken for the purpose of examining local dairy products in Basra city.

After conducting a microscopic and diagnostic examination to detect microorganisms in dairy products in the city of Basra, where Table No. 2 shows the types of bacteria and fungi that have been detected in dairy products.

No	sample NO	sample type	bacteria	Fungi
1-	1	Arab Cheese	-ve	-ve

2-	2	Arab Cheese	-ve	Aspergillus niger
3-	3	Manzan cream	-ve	Aspergillus niger
4-	4	Arab cheese	-ve	-ve
5-	5	Arab cheese	-ve	-ve
6-	6	Arab cheese	-ve	-ve
7-	7	Arab cheese	-ve	-ve
8-	8	Butter	E.coli	-ve
9-	9	Arab cheese	-ve	-ve
10-	10	Arab cheese	-ve	-ve
11-	11	Arab cheese	-ve	Candida albicans
12-	12	Arab cheese	E.coli+staph	-ve
13-	13	Arab cheese	E.coli	-ve
14-	14	Arab cheese	Staph+Ecoli	-ve
15-	15	Butter	E.coli	-ve
16-	16	Arab cheese	-ve	-ve
17-	17	Arab cheese	-ve	Alternaria alternate
18-	18	Arab cheese	-ve	Aspergillus niger
19-	19	Arab cheese	-ve	Alternaria alternate
20-	20	Butter	-ve	-ve

Table 2 shows the types of bacteria and fungi that were diagnosed in samples of dairy products and cheese in the city of Basrah. After conducting laboratory tests and cultivating the samples on Petri dishes, the results showed that in samples No. 2 and 3 in Ashar Al-Duck, there was a fungus of *Aspergillus niger* in the samples examined (Arab Cheese & Manzan Cream. And in Old Basra in sample No. 8 of Butter *e.coli* bacteria were detected and in sample 11: *Candida albicans* were detected in Arabic cheese In samples No. 12 *E. coli + staph* in Qurna region (2) and in samples 13 *Escherichia coli* was detected in Arabic cheese and in samples 14 it was detected *Staph + Ecoli* in Arabic cheese and sample 15 *E.coli* was detected in Zubair Butter - Waqf market. In sample 17 *Alternaria alt* was detected and in sample 18 *Aspergillus niger* was detected in a five-mile area of Arabic cheese In sample 19 alt was detected An alternative to Arabic cheese in Shatt al-Arab. As for the remaining samples, the result was negative.

### Recommendation:

1-Important to maintain good personal hygiene in order to produce high quality dairy products that are free of contaminants. Workers must wear clean, sterile work clothes, including gloves.

2-Wash your hands thoroughly with a good quality sanitizer or hand care product. Every time hands get dirty, they must be cleaned properly before returning to the work area. Fingernails should be trimmed and clean.

3-Wearing hand gloves is mandatory when handling or packaging the dairy products.

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