

Identification of fungal and Bacterial contamination in local and imported chips and juices in Al-Diwaneyah province

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Abstract

20 samples of chips and juices local and imported were collected from the local markets of AL-Diwaneyah province, including 10 samples of juices (Al-shahir, Teama apple, Natura apple, Tazech orange, Ghalia, Yomme, Our kid, Sunich, Tazaech choctel, Tazaech Red grapes) and 10 samples of chips (Popcorn Al-Batal, Chips Dunya, Hendereen, Chips Al-Fawaz, Chips Salwan, Sakr Babil). Max, Lay's, Hala, Popcorn and Panda). The microbiological examinations were conducted to investigate the bacteria and fungi related with the contamination of chips and juices. The results showed that most of the products were contaminated with different bacterial species and in varying numbers. In the juice samples, the two producers (Sunich, Tazaech choctel) were found to be contaminated with *Staphylococcus* and *Streptococcus*. The other samples were intact and the products (chips Hala , Popcorn Panda , Trabeesh Mr. Max, Popcorn Al-Batal, Chips Al –Fawaz) were also contaminated with *Staphylococcus* and *Streptococcus*. *Actinomyces* isolated only from the juice samples, whereas The fungus samples included *Penicillium*, *Fusarium*, in addition to *Actinomyces* were isolated from chips , which appeared in most of the samples collected.

Introduction

Juice and chips are a common and widespread industry around the world (1). The industry relies on many raw materials such as sugar, flavors and preservatives as well as pigments, which are the most important factors determining the quality and specifications of beverages (2) Food contamination occurs at any stage of its production, manufacture, transportation, storage, distribution or consumption due to any change or disruption of environmental conditions surrounding these stages, resulting in health hazards or diseases that may affect life (3).

Most of the warm countries, including Iraq, use liquids in large quantities to compensate for the loss of body due to sweating. Fruit juices are considered to be one of the juices

containing pathogens (4). As is well known, there are microorganisms such as yeast and fungi on the outer surface of fruit because of the direct contact of these fruits with soil or insects during their growth, harvesting, transport and storage processes (5). Many microbiological interventions are also introduced into juices prepared from fruits during the extraction process or from the water used, the vessels used, workers' hands and the surrounding area.

Conservation is one of the main means of preserving food and protecting it from expiration and pollution. It is considered a means of permanent preserving. The preservation of food is food package properly

in sealed containers and then treated in a sufficient heat to eliminate all forms of microcosm and in the same time, maintaining the desired qualities in food. The canned food is exposed to corruption resulting from chemical reactions or corruption caused by micro-activity, and the corruption of canned foods is the occurrence of any undesirable changes in food qualities. Whether this effect appears on the outer surface of container or not. The normal shape of the canister is to be concave on both ends due to the discharge occurring within it as a result of the initial heating process. If convection occurs on one or both ends of the box, this usually indicates corruption (6)

The aim of this study is to detect the microbiological contamination of the imported

Culture media:

- 1-Natrient agar
2. Eosin Methylene media (EMB)
- 3-Salmonella-Shigella agar
- 4- The Mannitol salt agar medium
- 5- Peptone water
- 6-Simmons citrate
7. Methyl Red-Voges Proskaur (MR-VP)
8. Sabouraud dextrose Agar

Isolation and diagnosis of bacteria and fungi:

1. Morphological Characteristics

Results and Discussion

The results showed that most of the products were intact and that more products were contaminated with different bacterial strains in varying numbers. In the juice samples, Sunich and Tazaech choctel products were found to be contaminated with *Strepto* and *Staph* only, while The rest of the samples were intact. The number of bacteria of the Iranian product (Sunich) were (300,220) Respectively, while the Iraqi product

and local juices and chips in the city of AL-Diwaniyah province

Materials and methods

The Samples of the current study were collected from some local markets in AL-Diwaniyah province with two samples included (10) juices and (10) chips. (Popcorn Al-Batal, Chips Dunya, Hendereen, Chips Al-Fawaz, Chips Salwan, Sakr Babil Hala, Popcorn Panda) , Whereas juses included 10 samples of (Al-shahir, Teama apple, Natura apple, Tazech orange, Ghalia, Yomme, Our kid, Sunich, Tazaech choctel, Tazaech Red grapes) .Samples were brought to the laboratory and cultured on the used culture media in this study. The dishes were incubated at 37 ° C for bacteria and 25 ° C for fungi.

The characteristics of growth colonies of bacteria and fungi were studied on media in terms of color , edges and transparency and then examined under the microscope (7)

2. Biochemical tests

- Methy -Red Test and Voges-Proskauer Test (8)
- Citrate Utilization test and the Indole test (9)

(Tazaech choctel) The number of bacteria (*Strepto*) appeared only with (3) colonies as shown in Table (1). The results of table 2 showed that the products of chips (Hala, Popcorn Panda, Trabeesh Mr. Max, Popcorn Al-Batal, Chips Al-Fawaz) were contaminated with bacteria (*Staphi Strepto*). As for fungi, *Actinomyces* were isolated from the juice samples as shown in Table 1. The fungus samples included *Pencillium*, *Fusarium*, *Aspergillus* and *Actinomyces*, which appeared

in most of the samples collected in Table 2. These results are consistent with (10), where

they found the highest bacterial contamination of juices with *staph. Aureus*

Table (1) Bacteria and Fungi isolated from Chips

Fungi	Shigella	Salmonella	Strepto	Staphi	E.coli	Sample No.
Actinomyces	-	-	110	-	-	Al-shahir(Iraq)
-	-	-	-	-	-	Teama apple(Egypt)
-	-	-	-	-	-	Natura apple(Vkraine)
-	-	-	-	-	-	Tazech orange(Iraq-karkuk)
-	-	-	-	-	-	Ghalia(Kuwait)
-	-	-	-	-	-	Yomme(Al-TajiLlraq)
Actinomyces	-	-	-	-	-	‘Our kid(Awiridj-Iraq)
-	-	-	220	300	-	Sunich(Iran)
-	-	-	3	-	-	Tazaech choctel(Iraq-karkuk(
-	-	-	-	-	-	Tazaech Red grapes(Iraq-karkuk)
Actinomyces	-	-	-	-	-	Lay's (Sudai Arabia)
Actinomyces Aspergillus	-	-	22	40	-	Chips Hala (Iraq)
-	-	-	2	-	-	Popcorn panda (Kirkuk/Iraq)
Actinomyces	-	-	200	-	-	Trabeesh Mr.Max(ALZaki group company/Iraq)
Actinomyces	-	-	12	10	-	Popcorn Al-Batal(Wadi AL-Gari factory/Iraq)
Actinomyces	-	-	-	-	-	Chips DunyaAL-(Haidry factory/Iraq)
Actinomyces	-	-	-	-	-	Hendereen(AL-Zohor company/Iraq)
Aspergillus Pencilium Fusarium	-	-	-	20	-	Chips Al-Fawas(AL-Khairat Factory/Iraq)
Actinomyces	-	-	-	-	-	Chips salwan(AL-Hussan factory/Iraq)
-	-	-	-	-	-	Sakr Babil (Iraq)

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