

MYCOTIC AND MICROBIOLOGIC CONTAMINATION OF CHEESE IN CITY OF TIRANA MARKETS

Yllka Allaraj¹, Anjeza Çoku², Nefail Biba³, Valmira Uka⁴, Silvana Mardhaja⁵

¹Institute of Food Safety and Veterinary Tirana, Albania. E-mail: yallaraj@yahoo.com

²Institute of Public Health Tirana, Albania. E-mail: anjascap@yahoo.it

³Agricultural University of Tirana, Albania. E-mail: nefailbiba@yahoo.it

⁴Institute of Public Health Tirana, Albania. E-mail: valmirauka@yahoo.com

⁵Institute of Public Health Tirana, Albania. E-mail: silvana.mardhaja@ishp.gov.al

Abstract

A mycological and microbiological survey of different kind of cheeses sold at five big markets in Tirana city is conducted during May 2012- January 2013, in order to identify if potentially toxigenic and pathogenic fungi were or not present. A total of 320 samples of cheeses (soft, hard, semi hard, edam cheese etc) available at 5 different markets, were tested for mold and yeast counts. Contaminated cheese has been responsible for outbreaks of food poisoning by several types of bacteria and molds. Based on the importance of mold, they are classified as pathogenic and no pathogenic one. For molds, satisfactory level $<10^4$ cfu/g results 194 cases 60.6%, unsatisfactory level (10^4 cfu/g - 10^6 cfu/g) results 70 cases 22% and potentially hazardous level $>10^6$ cfu/g results 56 cases 17.4%. Samples also were tested for the presence of TBC (Total Bacterial Count) and the total were 180 samples of cheeses (soft, hard, semi hard, edam cheese etc) available at 5 different markets. On our samples, 110 sample or 61.1% of them have resulted in rate and 70 sample or 38.9 % of them resulted to be over rate. The most common molds found in analyzed cheeses were *Aspergillus* spp, *Penicillium* spp, *Fusarium* and *Mucor*. In total are analyzed 58 samples, that have resulted in a load Thrush $> 10^6$ cfu /gr, which are considered as samples with high potential risk. In 16 sample or 27.5% of the samples was present *Aspergillus* gender, in 22 sample or 38 % was determined gender *Penicillium*, in 9 sample or 15.5% *Fusarium* gender and in 11 sample or 19 % was identified *Mucor* gender. Despite the high moulds and yeast counts, the analyzed products didn't show any visible signs of contamination.

Key words: *Molds, Cheese, Aspergillus spp, Penicillium spp, Fusarium, Mucor.*

Introduction

In food products intended for human consumption, milk by-products occupy a special place and for this aspect of their quality and safety, today is given great importance. In our country thrush pollution studies in food products of animal origin are part on very limited data.

Determination of incidence and quantitative assessment of pollution thruch of microbial [8] at some point traded cheese trades Tirana, poses the purposes of this study, which has to do with assessing the degree of contamination thruch microbial cheeses in the study, indentifyng molds pathogens present in the cheese which are considered high risk to consumer health, the prevention, minimization and elimination of risk in this product, and to determine the potential factors that contribute to the destruction of this product from molds.

Cheese consumption requirements nowadays is growing and it is particularly focused not only in terms of quality, but also in terms of security [4].Consequences presence of molds and pathogenic yeasts are quite heavy. Studies conducted by various authors have shown that some of molds pathogens have toxic effects,teratogene to concerogene [7]. Molds increase inoll food products at all stages of processing and conservation, changing not only food protein values caloric, but organoleptic properties such as color, smell, taste [5].

Cheese may be contaminated during production technology, processing, packaging, storage, transport, marketing and storage [6].

Material and methods

In total we analyzed 320 samples respectively white cheese &chees and seasoned produced in our country and industrial craft.This study was carried out on samples taken at five points cheese wholesale traders and retail in Tirana during the period May 2012-January 2013.During the testing of the samples for the presence of molds as well as for the presence of microbes are referring to international standards ISO.Originally made reference environment sterility control international standard ISO 7218:2007 [9]. When analyzing the samples used the ISO 6611:2004 international standard operating method [10].Specifically made reference sample preparation ISO 6887-1-2: 2004 [12]. At randomly two different periods of the cheese samples we received and have been tested and TCB (Total Bacterial Count) reference to ISO 4833:2004[11]. Got 25 gr cheese[1] and homogenization using 225 ml Water Pepton Buffer. Prepare dilutions decimals and did extension in the ground plate selective CYEA(Czapek Yeast Extract Agar) and incubation ne thermostat at a temperature of $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ for 5 days. Did count the colonies on each plate and evaluation of samples for the presence of molds [2], within the rate $<10^4$ cfu/gr of rate $< 10^5$ cfu/gr and samples with high potential risk $>10^6$ cfu/gr. For samples that we considered potentially high risk did se determination of molds [9]. In total we have analyzed and 180 samples for TCB (Total Bacterial Count), from where we used selective PCA(Plaint Cant Agar) and incubation ne thermostat at a temperature of $30^{\circ}\text{C} \pm 1^{\circ}\text{C}$ for 5 days. Did also count colonies on plates and evaluation of samples for the presence of TBC [3], within the rate 10^2 col/gr- $<10^5$ col/gr and out norms $> 10^6$ col/gr. Samples incubated in thermostat at temperature of $30 \pm 1^{\circ}\text{C}$ for 5 days. For the calculation of N(number of colonies) used the equation reference to as ISO 6611:2004 [10] AS well as ISO 4833: 2004 [11].

Results and Discussion

Cheese samples obtained in the study referred to the period May 2012 - January 2013. As mentioned and illustrated in table Graph No.1 in total there were analyzed for the presence of molds 320 white cheese and cheese samples at 5 points trader in Tirana, in 194 samples or 60.6% resulted with the rate $<10^4$ cfu/g, that is within the norm, 70 samples or 22% of them resulted in a rate $<10^4$ - 10^6 cfu/g, that is outside the norm and 56 samples or 17.4% of them have resulted in a rate $> 10^6$ cfu/gr which are considered potentially high risk.

Samples also were tested for the presence of TBC (Total Bacterial Count) and the total were 180 samples of cheeses (soft, hard, semi hard, edam cheese etc) available at 5 different markets. On our samples, 110 sample or 61.1% of them have resulted in a microbial load $<10^5$ col/g and 70 sample or 38.9 % resultated load 10^6 col/g that are considered outside the allowed rate, illustrated in Graph No.2.

Illustrated in Graph No.3 chart noted the presence of molds pathogens respectively in 58 samples of non-seasoned slice cheese artisan production & cheese cheeses non-seasoned manufacturing craft. These cheese samples are considered potentially high-risk sample.

The result shows that the genres of molds are found in several different types of cheeses namely:

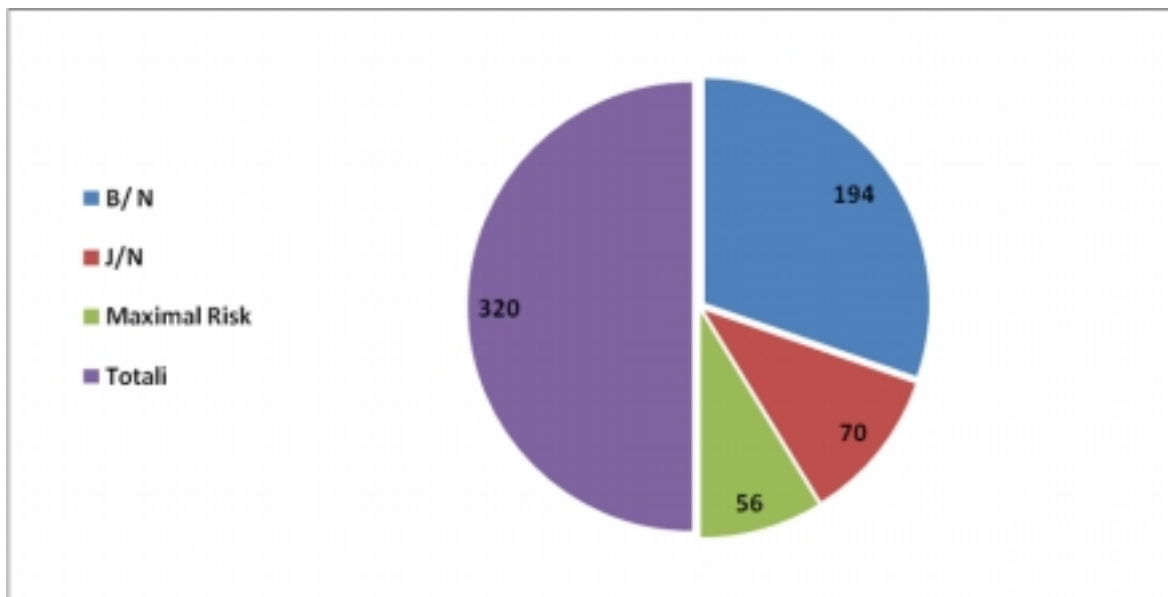
ú. *Gender Aspergillus spp* (referend to point No.11) was present in 9 cheese not-seasoned cheese samples produced in craft and in 7 samples not-seasoned white cheese produced so craft.

ú. *Gender Penicillium spp* (referend to point No.8) was present in 14 samples not-seasoned white cheese produced in craft, and in 8 samples are not-seasoned white cheese produced in industrial.

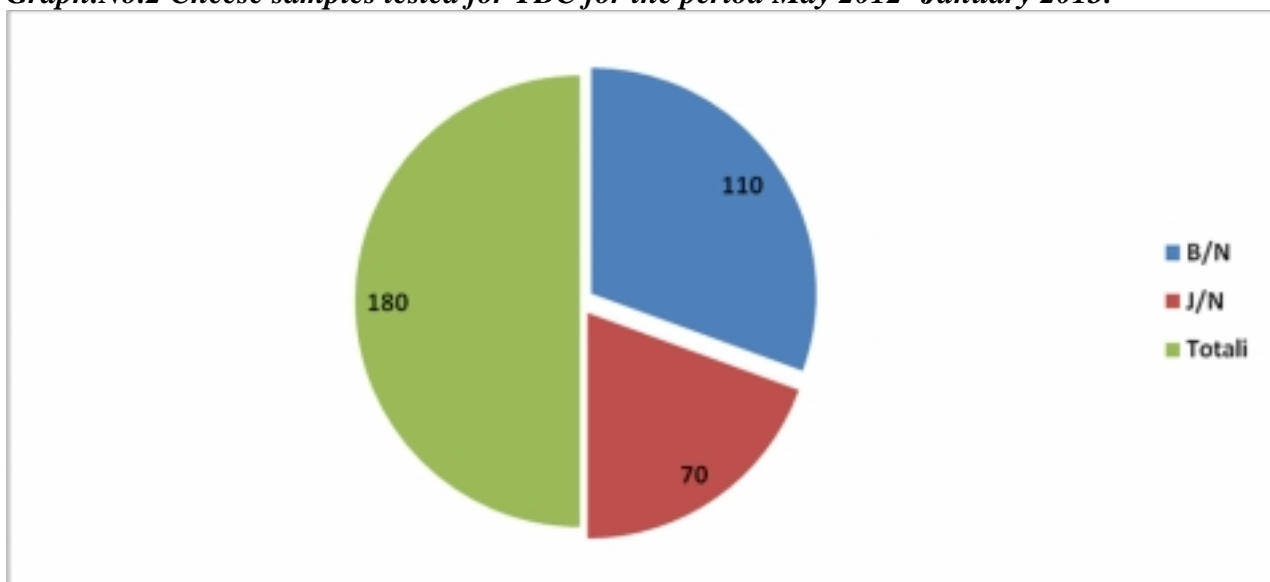
ú. *Gender Fusarium* (referend to point No.2) was present in 6 cheese not-seasoned cheese samples produced in craft and in 3 sample seasoned white cheese produced in order craft.

ú. *Gender Mucor* (referend to point No.7) was present in 7 cheese not-seasoned cheese samples produced in craft, and in 4 samples are not-seasoned white cheese produced in industrial.

Graph.No.1 Areas included in the study, the number of samples tested and laboratory results.



Graph.No.2 Cheese samples tested for TBC for the period May 2012- January 2013.



Graph. No.3 Laboratory results for Genres molds pathogens identified in cheese samples

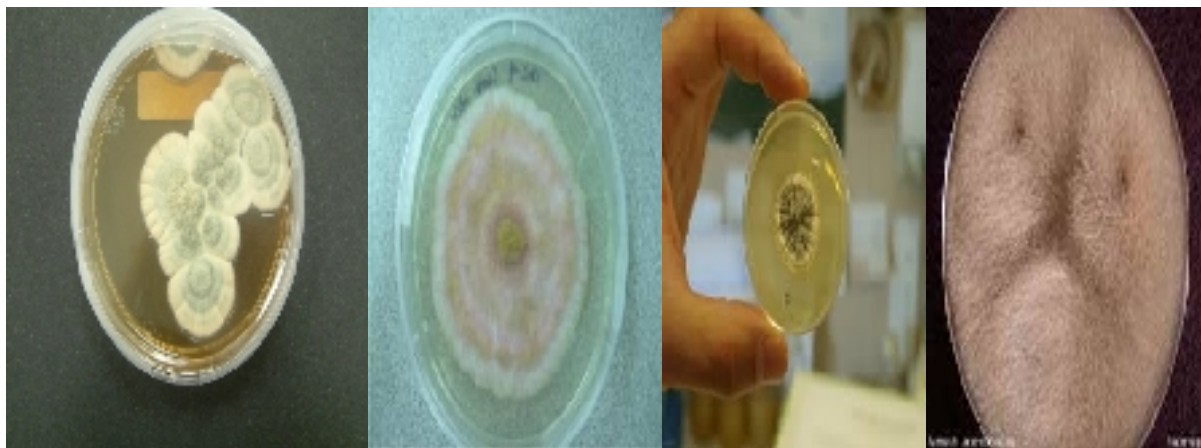
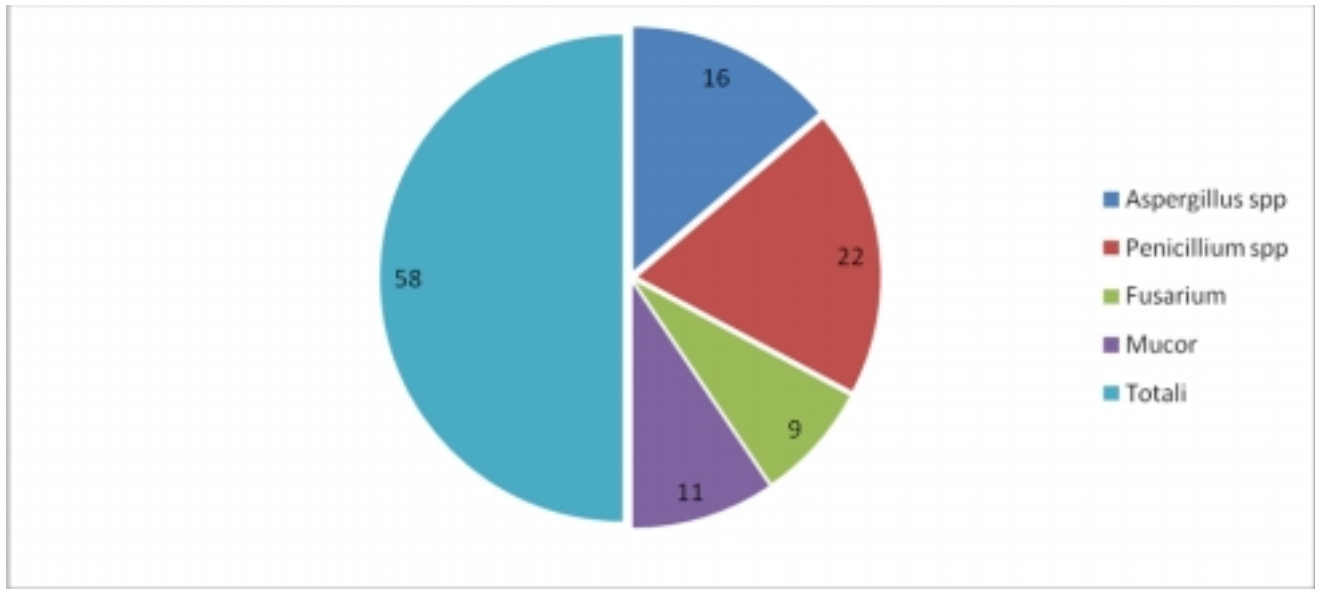
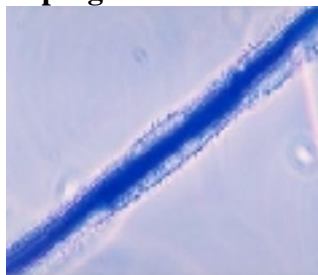


Fig.No.1. Microscopic view in a cheese sample with the presence molds.

Aspergillus Flavus



Penicillium spp



Fusarium



Mucor

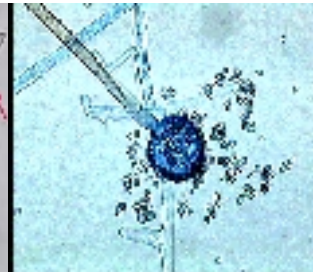


Fig.No.2. Microscopic view from moulds gender being present in a cheese sample



Fig.No.3. Microscopic view in a cheese sample with the presence TBC (Total Bacterial Count)

Conclusions:

Reference samples analyzed results that we not heavily, but rather are at risk from the presence of yeasts potentially dangerous to our health identified in cheese manufacturing country.

Genres moulds pathogens *Aspergillus* spp, *Penicillium* spp, *Fisarium* and *Mucor* are found both in white cheese and that good cheese pastazhionuar, traditional fabrics and industrial especially in November-March.

To prevent the risk from consumption of this product is inappropriate, we recommend that all customers be kept well informed about risks, factors affecting contamination and why not and the way the collection, packaging, transport, trade, conservation, that this food product.

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