ABSTRACT

Milk and dairy products are excellent environment for growth of spoilage and pathogenic microorganisms, which may spoil milk and dairy products or cause food borne diseases and affect shelf life of these products. To assess the microbiological quality of selected milk and dairy products prevalent in Fayoum City, the personal hygiene of dairy handlers and potential hazards to consumers, fifty random samples of milk and dairy products were examined for the detection of *E. coli*, *Pseudomonas* spp., *Listeria* spp., *Staphylococcus* spp., *Shigella* spp., yeast and molds, spore forming bacteria and psychrotrophic bacteria. The results show that the prevalence rate of *E. coli* was 10, 50, 50 and 100% in imported butter, soft cheese, hard cheese and raw milk samples, respectively. The prevalence rate of *Pseudomonas* spp. was 40, 50, 83.33and 100% in plain yoghurt, soft cheese, hard cheese and raw milk examined samples, respectively. The prevalence rate of *Staphylococcus* spp. was 12.5, 80 and 83.33% in soft cheese, raw milk and hard cheese examined samples, respectively. *Shigella* spp. was detected in 10 and100% of imported butter and raw milk examined samples, respectively. The prevalence rate of yeast and molds was 60, 75, 83.33 , 100 and 100% in plain yoghurt, soft cheese, Baladi butter, hard cheese and raw milk examined samples, respectively. The prevalence rate of spore forming bacteria was 40, 50 , 75, 100 and 100% in plain yoghurt, Baladi butter, soft cheese, hard cheese and raw milk examined samples, respectively. The prevalence rat of psychrotrophic bacteria was 60, 66.67, 75, 100 and 100% in Plain yoghurt, Baladi butter, soft cheese, hard cheese and raw milk examined samples, respectively. Whereas, *Listeria* spp. was not detected in all examined dairy samples.

Two isolates of bacteria were identified by BiologDB(2013), they were *Staphylococcus saprophyticus ss saprophyticus* and *Escherichia coli,* Two isolates of yeast were identified by API 20 CUX kits, *Candida pelliculosa* and *Cryptococcus laarentii*.

In this study *Salvadora persica* L. (Miswak) aqueous extract (SPAE) was used as an antibacterial agent for pathogenic bacteria. The antibacterial activity of SPAE was determined in two ways, agar diffusion method with *Staph. saprophyticus, E. coli* and *Ps. aeruginosa* as indicators pathogenic bacteria and Minimum Inhibitory Concentration (MIC) and Minimum Lethal Concentration (MLC) values of (SPAE) by broth dilution method against the same pathogenic bacteria.

Organoleptic study revealed that there was an insignificant effect on texture or appearance when SPAE was added to chocolate milk and this addition of SPAE at the level 3.12mg/ml to chocolate milk improved the Aroma of chocolate milk.

Key words: Isolation, Identification, antibacterial activity of *Salvadora persica* aqueous extract (SPAE).

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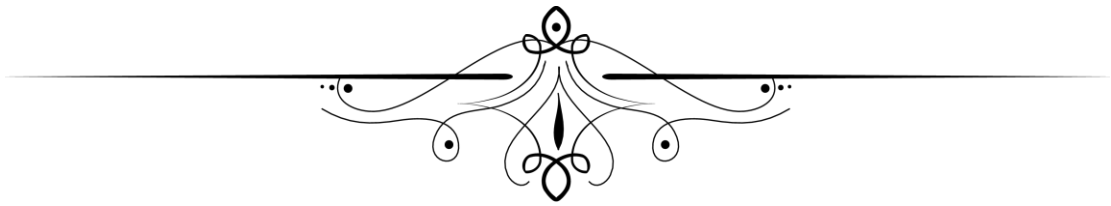

1. INTRODUCTION

Food poisoning and food safety have become very topical subjects, eliciting a great deal of public concern to many people all over the world. This is a result of emerging foodborne pathogens that continue to cause outbreaks of food borne diseases in different countries. A wide variety of diseases can be caused by eating food contaminated with pathogenic microorganisms or their products; by no means all these diseases can be classed as food poisoning.

Foodborne disease outbreaks have heightened the awareness of foodborne pathogens as a public health problem around the world. In the US, reports have shown that foodborne illness account for approximately 76 million illnesses, 325, 000 hospitalization, and 5000 deaths each year (Mead *et al*., 1999).

Milk ranks high among other foods and is considered the most perfect food for human from birth to senility as it is not only has good sensory properties and all nutrients required for the body for rapid growth, but also could prevent or reduce risks of many nutritional deficiency diseases (Kalkwarf *et al*., 2003; Marshall *et al*., 2003).

Raw milk is still used by large number of farm families and workers and by a growing segment of the general population who believe that the milk is not only safe but also imparts beneficial health effects that are destroyed by pasteurization (Angulo *et al*., 2009). Milk and products can harbor a variety of microorganisms and can be important sources of food borne pathogens. The presence of food borne pathogens in milk may be due to direct contact with contaminated sources in the dairy farm environment and to excretion from the udder of an infected animal.

More than 200 known diseases are transmitted through food by a variety of agents that include bacteria, fungi, viruses, and parasites (Oliver *et al.*, 2005b).

According to public health and food safety experts, each year millions of illnesses in the United States and throughout the world can be traced to foodborne pathogens. While the food supply in the United States is one of the safest in the world, the Centers for Disease Control and Prevention (CDC, 2003, 2004) estimates 76 million people get sick, more than 300,000 are hospitalized, and 5,000 die each year from foodborne illness. The risk of foodborne illness has markedly increased over the last 20 years, with nearly a quarter of the population at higher risk for illness today. Consequently, preventing illness and death associated with foodborne pathogens remains a major public health challenge (Oliver *et al.*, 2005b).

The quality of milk is determined by aspects of composition and hygiene. Milk is a highly nutritious food that serves as an excellent growth medium for a wide range of microorganisms (Rajagopal *et al*., 2005).

The microbiological quality of milk and dairy products is influenced by the initial flora of raw milk, the processing conditions, and post heat treatment contamination. Among all microorganisms *Escherichia coli* is frequently contaminating organism, and is reliable indicator of fecal pollution generally in unsanitary conditions of water, food, milk and other dairy products (Soomro *et al.*, 2002).

The most important source of contamination is probably the human. Human skin surfaces and nasal passages harbor Staphylococci. Also, water supplies contaminated with fecal material may contain pathogens.

The contaminants reached the products either during processing or handling (Kumar and Prasad, 2010).

Dairy industry should concern about food safety because (1) bulk tank milk contains several foodborne pathogens that cause human disease, (2) outbreaks of disease in humans have been traced to the consumption of raw unpasteurized milk and have also been traced back to pasteurized milk, (3) raw unpasteurized milk is directly consumed by dairy producers and their families, farm employees and their families, neighbors, etc., (4) raw unpasteurized milk is directly consumed by a much larger segment of the population via consumption of several types of cheeses including cheeses manufactured from unpasteurized raw milk, (5) entry of foodborne pathogens via contaminated raw milk into dairy food processing plants can lead to persistence of these pathogens in biofilms and subsequent contamination of processed food products, (6) pasteurization may not destroy all foodborne pathogens in milk, and (7) faulty pasteurization will not destroy all foodborne pathogens (Oliver *et al*., 2005a).

Therefore, this study aims to carryout a survey of some dairy products traded in the Fayoum governorate market to identify the spoilage and pathogenic microorganisms. Then, to study the effect of natural preservative addition on the reduction of microorganism in some chocolate milk.