

Chapter 5

Manufacture of Dairy and Non-Dairy Camel Milk Products

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ABSTRACT

Camel milk is popular in the world as it has an excellent nutritive value and many health benefits. There are many dairy and non-dairy products that could be manufactured from camel milk such as milk powder, UHT-milk, yogurt and fermented products, cream, ghee, ice-cream, frozen products, sweets, and candy (such as chocolate bars and cookies). In general, camel milk processing encounters challenges. This chapter is aimed to cover the recent issues of the manufacturing and processing of the most popular above-mentioned camel milk products based on the recent studies and other available commercial resources. Camel milk seems to have many challenges during high temperature treatment as well as creaming to manufacture yogurt and other fermented dairy products, cream, and butter. On the other hand, ice cream and frozen yogurt and chocolate bar manufacturing from camel milk seems to be less challenging. Further research is recommended to solve the faced challenges and to develop different versions of these products such as skim, low fat, low sugar, and flavored products.

INTRODUCTION

Camel milk is popular in the world as it has an excellent nutritive value and many health benefits. Camel milk is known to be richer than bovine milk in vitamin C (Stahl, Sallmann, Duehlmeier, & Wernery, 2006). Dairy products manufactured from camel milk represent a source of energy and nutrients (Brezovecki et al., 2015) and probably replace fruits and vegetables for people who live in the harsh condition of deserts (Sawaya, Khalil, Al-Shalhat, & Al-Mohammad, 1984). It had been recognised that camel milk is only suitable for drinking as fresh or sour milk due to challenges associated with the production. Recently, several dairy and non-dairy camel milk products have been developed and standardized us-

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ing different preparation or production method (Korlepara, Kalla, Manthani, & Keerthi, 2017). These products are available commercially in India, Mongolia, Kazakhstan, Sudan, and Turkmenistan (Solanki & Hati, 2018) as well as in Saudi Arabia, United Arab Emirates, and United states of America including milk powder, ultrahigh temperature (UHT) treated milk, yogurt and fermented products, cream, butter, ghee, ice-cream, frozen products, sweets and candy (such as chocolate bars and cookies). According to the latest FAO statistics, the demand on camel products has increased due to the increase in the camel population and slaughtering (Galeboe, Seifu, & Sekwati-Monang, 2018). A recent study showed that camel population has grown faster than cattle, sheep, horse, and lama populations but it is similar to buffalo population and lower than that of goat population (Faye& Bonnet, 2012). Moreover, camel dairy plants are developed in many countries market especially in the Horn of Africa and Arabian Peninsula, but the global economy still marginal except for camel meat (Faye, 2016). However, the new products such as cheese, yogurt, or ice cream, has led to significant changes in the added value chains of camel milk (Faye et al., 2014). This chapter is aimed to cover the recent processing methods, and issues of the most popular camel milk products based on the recent studies and other available commercial resources.

BACKGROUND

Camel milk is popular in the world specially in the Middle Eastern, Asian, and African cultures (Zibae et al., 2015). Camel milk is receiving more recognition as a global product in optimizing human health as drinking milk (Nikkhah, 2011). Many studies indicated that camel milk has benefits and nutritional values and traditionally prescribed as a cure for disease recovery such as kidney, liver, cancer, and children diseases (Zibae et al., 2015). In the present book, the potential therapeutic and disease prevention properties of camel milk will be discussed in details in Chapter 7 and 8. Yagil (1982) and the Food and Agriculture Organization of the United Nations (FAO, 2008) predicted that dairy products manufactured from camel milk will appear on European supermarket shelves. In addition, the demand on camel milk is increased from Sahara to Mongolia despite the production arrived approximately to 5.4 million tonnes annually, but it is still greatly inadequate. Therefore, many sectors and local investments in the Middle East and the Western world would made effort to meet demands and create gainful markets (Zibae et al., 2015).

Camel milk composition was discussed in details in Chapter 2 of the present book. Only few physiochemical properties of camel milk compared with cow and buffalo milk is given here (table 1). The chemical composition of camel milk gives the milk and milk products higher nutritional values but, on the other hand, dairy products manufacturing from camel milk do not proceed as other milk types such as cow and goat milk. Camel milk dairy products production is challenging and encounters number of obstacles.

The popular consumption of camel milk occurs as fresh or fermented form, but there are many dairy products could be manufactured. Moreover, these products constitute a major part of the diet of the population in rural areas such as Africa and Asia, by virtue of the geographical nature of living, because they consider these products source of main nutrients and energy too (Brezovečki, Cagalj, Dermitt, Mikulec, Ljoljić, & Antunac, 2015). Therefore, it is valuable to focus nutritionally and practically (manufacturing method) on the major products of camel milk.

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