

Isolation and Molecular Characterization of Local Goat Milk Casein for Nutraceutical Value

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Abstract. Goat milk possesses a variety of biochemical composition, technological properties and bacteriological quality depending on genetic factors. Casein is the main protein that derived from goat milk which consists of alpha, beta and kappa casein. Nowadays, people are suffering from cow milk allergy. Goat milk can be used as alternative by people who suffer from cow milk allergy. The aim of this study is to extract casein from local breed goat milk and identify the molecular characterization of casein for nutraceutical value. The casein was successfully extracted using extraction method. Extraction is a common technique used to separate a desired substance when it is mixed with other components. As for the result of the extraction, the morphology of casein extracted from local goat milk was observed to be white in colour and was in semi-solid form. The average percentage of casein obtained was 24.25%. Then, the casein was analysed by running it in the SDS-Page. The major fraction is β -casein and the minor is α -casein that can be seen between 20kDa and 30kDa. The result obtained in this study indicates the presence of casein in local goat milk and has potential in future to be used as an alternative by people who suffer from cow milk allergy.

Introduction

Nutraceutical food may provide numerous benefits to the consumers because of the active components of the food. Nowadays, functional food has been exponentially increase because a lot of scientific evidence confirming the relationship between food and health [1]. The demand of goat milk was increase dramatically worldwide as more advantages of goat milk over bovine milk have been discovered such as higher concentration of some nutrients, special flavor and easy digestion. Goat milk is vary in term of nutritional properties, composition and biological stability depending on the genetic factor and goat farming practices [2]. The interest of goat milk as a functional food has become the current trend to developed country because the advantages of the nutritional properties compared to cow's milk. The lower allergicity especially toward children increases the popularity of goat milk as the functional food. The chemical characteristics of goat milk can be used to manufacture a wide variety of products including fluid beverage products like low fat, fortified, flavored and ultra-high temperature (UHT) milk. It is also used to make fermented products such as cheese, buttermilk or yogurt, frozen products such as ice cream or frozen yogurt, butter, condensed or dried products, sweets and candies. In addition, other specialty products such as hair, skin care and cosmetic products made from goat milk recently have gained a further attention. Nevertheless, high quality products can only be produced from good quality goat milk. The quality of the milk should have the potential to tolerate technological treatment and transformed into a product that satisfies the expectations of consumers in terms of nutritional, hygienic and sensory attributes [3]. Therefore, the goat milk industry will be essentially reliant on the establishment of high producing dairy goat herds, production of high quality milk, improved and carefully controlled product manufacturing, packaging, storage and distribution techniques to produce functional foods with high qualities of