

FUNCTIONAL PROPERTIES OF CHEMICALLY MODIFIED CAMEL MILK WHEY PROTEINS

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(Received 12 October 2018, Revised 26 February 2019, Accepted 19 March 2019)

ABSTRACT : The effect of acylation, esterification and deamination on solubility, foaming and emulsifying properties whey proteins of camel milk investigated. In pH values greater than 8, the solubility, of control, acylation and deamination camel milk whey proteins was high. In pH values under than 5 the solubility of control whey proteins of camel milk were greater than the solubility of acylation and deamination camel milk whey proteins. Compared control whey proteins of camel milk, acylation whey proteins of camel milk solutions produce more foam instantly subsequent sparing, while esterification and deamination reduce whey protein ability to for foam. The highest EAI for control and acylation camel milk whey proteins was at pH 10. Modification of camel milk whey proteins with esterification and deamination change their highest EAI to 9.

Key words : Camel milk whey proteins, functional properties, chemical modification of proteins.

INTRODUCTION

Whey protein is a term often used as a synonym for milk-serum, proteins that rest soluble following the isoelectric precipitation of casein at pH 4.6 at 20 °C or after the coagulation of casein by incomplete proteolysis with rennet, (O'Mahony *et al*, 2013). Whey protein part shows about (18-20%) of whole milk proteins.

Whey is a complex mixture of various proteins. In generally, the major ingredients cover β -LG (55%), α -LA (24%), immunoglobulins (15%) and serum albumin (SA, 5%) (Wong, *et al*, 1988).

Camel whey is recorded to have great content of antimicrobial factors such as immunoglobulin and lactoferrin (Elagamy, 2000). Another main distinction like between bovine whey and camel is the lack of β -LG found in various live cattle ruminants' milk. The major ingredients of camel whey contain SA, lactoferrin, α -LA, immunoglobulins, and, peptidoglycan recognition proteins (Farah, 1993; Kappeler, 1998). Additionally, camel milk is much difference of bovine milk in its physical characteristics. It is whiter and less viscous, however it include all of the main nutrients in bovine milk (Elagamy, 2006). At mediocre, camel milk includes further whey protein than bovine milk (Farah, 1993).

Functional features like as foaming and emulsifying of bovine milk whey proteins have been totally studied

and recorded. In recent years, it has been recorded that there is an improvement in functional features of proteins following adjustment of some amino acids. As a case, acylation of wheat proteins (Grant, 1973), cottonseed flour protein, (Childs and Park, 1977), and sunflower proteins isolate (Kabirullah and Willis, 1982) improved the functional features of proteins for particular food applications.

While, there is little notification about these features of camel whey proteins. Understanding these functional features is fundamental to foretell the perception of consumers and how they will react to certain food product because of its textural properties. Taste and perception of food products are very influenced by the structures that are formed by the ingredients used to devise it.

Improvements of functional properties of whey proteins are favorite. In this research, the impacts of acylation, esterification and deamination on the functional features of camel milk whey protein were examined.

MATERIALS AND METHODS

Camel milk source

Bulk camel milk was collected from thirteen animal from Al-Najef desert –Iraq .Milk was skimmed by centrifugation on 2400g for 15 min at 4R°C.