PRELIMINARY STUDY ON THE PROTEIN CHEMISTRY OF GOAT MILK

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EXTENDED ABSTRACT

Incidence of food allergy can increase with the introduction of cow milk/(Wood 1986). Food allergy is the clinical syndrome resulting from sensitisation of an individual to dietary proteins or other allergens present in the intestinal lumen. Cow milk allergy is common during infancy however, it is not confined to childhood (Deamer. Gerrard and Speer 1979). Allergic response elicited by cows milk may be attributed to its soluble whey proteins and such persons are prescribed goat milk or cow milk products such as yoghurt which they appear to tolerate well. Unlike cow milk, there is a dearth of information on the composition and chemistry of goat milk proteins which may be responsible for the aforementioned favourable effect. In this study, proteins in goat milk have been analysed and compared with those of human milk, cow milk and yoghurts (made out of cow milk) in order to understand the reasons for this differences in the allergic responses.

Twenty five samples of milk were collected from each species. In the cow and the goat these were collected at different stages of lactation but it was ensured that equal numbers per stages were collected in each species. In the human all samples were from early lactation. All the samples were analysed for total protein, casein, whey proteins by using both Kjeldhal and Biuret assays and further analysed by Sodium Dodecyl Sulphate Polyacrylamide Gel Electrophoresis (SDS-PAGE). The electrophoretic patterns of proteins in individual samples were compared with that of the commercially available milk protein standards.

The average total protein concentration (g/l) of goat milk, cow milk, human milk and yoghurt was 35.2, 33.5, 8.3 and 33.0 respectively. The casein concentration and the whey proteins for the three species were 29.1, 24.1, 2.4 and 6.13, 9.51, 5.97 (g/l) respectively. Casein to whey protein ratio was high in cow and goat milk and in human the ratio was very much lower. SDS-PAGE revealed that goat milk had similar protein bands to that of cow milk but during the preparation of yoghurt the whey protein fraction of fresh milk has reduced and SDS-PAGE showed lighter whey protein bands in the yoghurt. Further studies are in progress to identify and quantitate the different proteins of these milks and their products.

References

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