Comparison of the Allergenicity and Immunogenicity of Camel and Cow’s Milk—A Study in Brown Norway Rats

Background: When breastfeeding is impossible or insufficient, the use of cow’s milk-based hypoallergenic infant formulas is an option for infants suffering from or at risk of developing cow’s milk allergy. As the Camelidae family has a large evolutionary distance to the Bovidae family and as camel milk differs from cow’s milk protein composition, there is a growing interest in investigating the suitability of camel milk as an alternative to cow’s milk-based hypoallergenic infant formulas. Methods: The aim of the study was to compare the allergenicity and immunogenicity of camel and cow’s milk as well as investigating their cross-reactivity using a Brown Norway rat model. Rats were immunised intraperitoneally with one of four products: camel milk, cow’s milk, cow’s milk casein or cow’s milk whey fraction. Immunogenicity, sensitising capacity, antibody avidity and cross-reactivity were evaluated by means of different ELISAs. The eliciting capacity was evaluated by an ear swelling test. Results: Camel and cow’s milk showed similarity in their inherent immunogenicity, sensitising and eliciting capacity. Results show that there was a lower cross-reactivity between caseins than between whey proteins from camel and cow’s milk. Conclusions: The study showed that camel and cow’s milk have a low cross-reactivity, indicating a low protein similarity. Results demonstrate that camel milk could be a promising alternative to cow’s milk-based hypoallergenic infant formulas.

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