Suitability of goats milk infant formula and follow-on formula for infants who are allergic to cows’ milk

Issue
On 28 February 2014 an amendment to the infant formula and follow-on formula Directive 2006/141/EC will enter into force. This will permit goats’ milk infant formula and follow-on formula to be sold on the UK market.

It is expected that one company will be placing a goats’ milk based formula on the UK market in May 2014; however, other companies may also provide such products in future.

The FSA will be advising that goats’ milk infant formula and follow-on formula is not suitable for infants with a cows’ milk protein allergy, unless directed by a healthcare professional.

Background
Cows’ milk protein allergy is the most frequent food allergy in the first years of life. A review paper by the World Allergy Organization estimates that 1.9% to 4.9% of children suffer from cows’ milk protein allergy¹. Milk from other mammalian species has been suggested as a possible nutritional alternative to cows’ milk for these infants.

However, clinical studies have shown a high risk of cross-reactivity between the proteins in cows’ milk and in other mammalian milk, including goats’ milk²,³. In addition cases have been reported of cows’ milk allergic infants developing anaphylaxis after the ingestion of goat’s milk⁴.

Milk contains around 3.5% protein. The major proteins in cows’ milk are caseins (~ 80% of the protein and include αs1, αs2, β, and κ) and whey proteins (~20% of proteins and include α-lactalbumin and β-lactoglobulin). Individuals with a cows’ milk allergy, can be allergic to one or more of these proteins.

There is a difference between goats’ and cows’ milk particularly in the composition of caseins⁵. However, goats’ milk proteins are similar to the major milk proteins present in cows’ milk in their

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general classification and there is high homology (84-95 %) between the amino acid composition of the six major proteins of cows’ and goats’ milk, resulting in a high risk of cross reactivity\(^6\).

Although there is little published literature in this area, it is estimated that the majority of infants with a cows’ milk protein allergy will also react to goats’ milk. There will be a small percentage of infants with a cows’ milk protein allergy who may tolerate goats’ milk, however, the suitability of this product for such infants would need to be advised by a healthcare professional.

It should also be noted that selective allergy to goats’ milk proteins only has been reported\(^7\).

**EFSA findings**

In 2012 EFSA published an opinion on the suitability of goats’ milk protein as a source of protein in infant formula and follow-on formula\(^5\). Regarding allergenicity, they concluded that there are insufficient data on the allergenicity of goats’ milk protein and there were no convincing data to support the conclusion that the incidence of allergic reactions is lower when feeding goats’ milk-based infant formula when compared with cows’ milk-based infant formula. They also concluded that substituting goats’ milk protein for cows’ milk protein in infant formula intended for cows’ milk allergic infants cannot be considered safe, unless proven to be so in clinical and in vitro studies.

Taking all of these points into consideration, it can be concluded that the risk of cross-reactivity between cows’ and goats’ milk proteins in cows’ milk allergic infants is high and can lead to life-threatening reactions. Therefore infants allergic to cows’ milk protein should avoid goat’s milk infant formula and follow-on formula.

**Recommendation**

Given the high risk of cross reactivity between cows’ and goats’ milk proteins, the Government will be advising the following: **Goats’ milk infant formula and follow-on formula is not suitable for infants with a cows’ milk protein allergy unless directed by a healthcare professional.**

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\(^6\) EFSA (European Food Safety Authority), 2012. Opinion of the Scientific Panel on Dietetic Products, Nutrition and Allergies on a request from the Commission relating to the suitability of goat milk protein as a source of protein in infant formula and in follow-on formula. The EFSA Journal 10 (3):2603.