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Koonac Goats, Submission to Proposal P1022 - Primary Production & Processing Requirements for Approved Raw Milk Products

About Koonac Goats

Koonac Goats (Lot 12, 936 Bessell Road, Rosa Brook, WA 6285) has been registered as Standard 4.2.4 Division 2 **DAIRY PRIMARY PRODUCTION BUSINESS** and Standard 4.2.4 Division 4 **DAIRY PROCESSING BUSINESS** on 27. May 2013. It is a small, family owned and operated **two-person business**, run by Sonja Gammeter and Andreas Frutiger. Our dairy herd consist of approx. 25 milking goats. Our milk production is 50-100 litres per day. Most of the milk is used to make cheese, which is sold locally on the Farmers Market (Margaret River), to restaurants and retail food shops.

General comments to P1022

Different species of milking animals are not taken into account

Milk from cows, buffalos, goats, sheep, and camelids is used for human consumption. However, P1022 is solely based on cow's milk, and the same regulations are applied to the milk of other species. This is not acceptable, for several reasons:

- Milk from the different species differs substantially in their composition and chemistry. For this reason it is not valid to assume, for example, that a predictive model, which has been developed for cow's milk, can also be used for the milk of other species.
- Goats and sheep are much cleaner than cows. Goats, for example, don't defecate during milking, which makes it much easier to avoid pathogen contamination of the milk during milking. For this reason it is possible to maintain a higher level of food safety with raw goat's milk than it is possible with cow's milk. This difference should be taken into account in the new regulations.

- Unfortunately, no statistical data are available for Australia on the milk production from different species, but it is safe to assume that most of the milk (>90%) is cow's milk. Globally, 83.1% of the total milk production is cow's milk, 13.0% is buffalo milk, 2.3% is goat milk, 1.3% is sheep milk, and 0.3% is milk from camelids (FAO 2011). However, the small amount of milk from goats, sheep, and buffalos is no reason to silently ignore it, since it seems likely that the percentage of processed raw milk will be much higher for goats, sheep, and buffalo than it will be for cows, and that, therefore, the absolute amounts of raw milk from the different species will be within the same range, and none of them will be insignificant enough to be ignored.

Two food safety outcomes

The basic concept of the proposed, modified Standard 4.2.4, how to achieve an acceptable level of food safety with raw milk products, is based on two "defence lines".

- The 1st "defence line" is to make sure that the concentration of pathogens in the raw milk is below a certain concentration (e.g. table on page 7, Supporting document 1).
- The 2nd "defence line" is to make sure "*that the intrinsic physico-chemical characteristics of the raw milk product do not support the growth of pathogens, and there is no net increase in pathogen levels during processing*" (page 4, Supporting document 2)

This 2nd "defence line" is based on the assumption that, even if no pathogens are detected in the raw milk, "...*this does not equate to an initial level of zero, and levels below the limit of detection should be assumed (<0.04 cfu/g*) (page 4/5, Supporting document 2).

The level of pathogens in the final produce (e.g. cheese) is the product of the initial concentration in the raw milk, multiplied by the growth during the process. If the initial concentration of pathogens is ZERO, NO growth of pathogens occurs during the process, and the final product is also free of pathogens (unless the milk is contaminated during the process). We are aware that this is only theoretically possible, and that there will be always some contamination. However, the goal of control measures is to limit the pathogen concentration in the final product to an ACCEPTABLE level, which is >0. Consequently, if the initial level of pathogens in the raw milk is low enough, the final pathogen concentration will still be at an acceptable level, despite a certain growth during the process.

The assumption that contamination is present, even if it is not detectable, is NOT supported or detailed by any data or evidence. It puts those producers in an unfair disadvantage, which,

by means of very careful and clean operation, produce raw milk, where the concentration of pathogens is very close to zero.

Furthermore, we suspect that in almost all cases of dairy food poisoning in Australia contamination occurred after pasteurisation, and that only very few cases were caused by contaminated raw milk. Therefore, if "*no net increase*" (of pathogens) "*during the process*" would actually be required to achieve an acceptable level of food safety, it would have to be applied to all processing of milk, not only to processing of raw milk.

Predictive Models and Challenge Studies

Predictive models and/or challenge studies are suggested to provide evidence that there is no net increase of pathogens during the processing steps. To our opinion, these are theoretical possibilities, but not really practical.

Predictive models, as outlined in Supporting document 3, were not able to predict no-growth of *L. monocytogenes* satisfactory. Lack of required data on physico-chemical characteristics was identified as main reason for this poor performance. Cheese-makers cannot be expected, and are not able to fill in this gap!

Furthermore, as outlined above, all predictive models are based on cow's milk. Without validation, they can't be used for the milk of other species.

Challenge studies seem to offer more reliable outcomes (if properly conducted). However, we see two major problems with challenge studies:

The outcome of a challenge study is strongly influenced by the conditions (e.g. temperature) it is conducted at (outlined in Supporting document 3). For this reason, the environmental parameters for the challenge study would have to be precisely defined by FSANZ, which seems not possible.

Furthermore, only big companies/cheese producers have the resources (scientific staff and laboratory) to conduct challenge studies. However, it is unlikely that big dairies (n x 100 animals milked) are able to implement and fulfil the additional requirements in regards to the milking operations (e.g. clean and dry teats before milking, Supporting document 1, page 15). This is only possible in small "boutique dairies", where a lot of the milking is done manually, on an "animal-to-animal" basis. Such small operations, on the other hand, which are likely the majority of dairies which are interested in producing cheese from raw milk, don't have the resources to conduct challenge studies.

Suggestion

In conclusion we suggest that:

- The new regulations have to distinguish between the milk of different species, unless it has been substantiated by scientific evidence that they can be treated identically.
- The level of pathogen detection in the raw milk is to be lowered to the concentration which is low enough to make sure that the pathogen concentration in the final product (cheese) does not represent a food safety risk, despite a certain growth of pathogens during the process.
- The raw milk is classified into two categories, depending of the initial level of pathogens.

  Category 1: Initial concentration of pathogens is low enough to achieve an acceptable level of food safety in the final product (cheese), despite a certain growth during the process of cheese making. Food safety is maintained by regular analysis of the milk samples (as suggested) AND regular analysis of samples of the final product.

  Category 2: Initial concentration of pathogens is within the recommended monitoring criteria (e.g. table on page 7 of Supporting document 1). The producer must show *that the intrinsic physico-chemical characteristics of the raw milk product do not support the growth of pathogens, and here is no net increase in pathogen levels during processing.*