

Feasibility analysis of inactivation of milk containing antibiotics

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Schlüsselwörter

Milk, antibiotic residues, processing, resistances

Problemstellung und Zielsetzung

Milk that is contaminated with antibiotics as a result of mastitis represents a sustainable problem. On the one hand, they may not be sold as food on the other hand a special disposal or inactivation of the antibiotic milk is required. The main objective of the project is to gain extra knowledge and to develop an assessment and decision base for the inactivation of antibiotics in milk.

Material und Methoden

The project is build up on different practical research questions: How can antibiotic milk are separated from non-antibiotic milk on farms? Which possible utilization alternatives for milk containing antibiotics exist in Switzerland? What risks and benefits are involved in the reutilization alternatives (Chance-Risk Assessment)? The groundwork for this study comes from a thorough literature research and consultations with experts.

Ergebnisse und Bedeutung

The assessment of waste disposal and recycling options for antibiotic milk has shown that there is no clear solution to recommend, since many technological and logistical issues remain problematic today. It can be summarized that feeding the contaminated milk directly on the farm (or disposing of the manure) is environmentally disadvantageous and has a minor effect on the inactivation. In contrast parallel feeding or bringing out the milk as manure is an economically interesting solution could, since no additional costs arise for the farmer. But these ways of utilization should be avoided in organic and sustainable farming.

Further processing for lactose and casein as new basic material seems interesting. However, the potential inactivation of the antibiotics during processing is still understudied. Moreover the practical realisation of collecting the contaminated milk and environmental friendly transporting to such processing companies is for small scale farms problematic. Alternative uses in the form of Galalith, packaging materials, textiles or art supplies in Switzerland are not yet feasible and would have to be processed abroad. It would require the construction of new networks and raising the awareness of key players in order to utilize antibiotic milk in this channel sustainably.

The usage of antibiotic milk in biogas production, however, appears to be suitable. Switzerland has a well developed network of agricultural, industrial and municipal biogas plants, and this field is expanding. In this case, the transport distances can be kept small, already longer stored milk can be converted to energy or heat and the farmers could gain an economical advantage. In this context, it is important to clarify what activity plant antibiotics show in the biogas process and to research the degree of inactivation further. Otherwise a closer look would have to be taken at the disposal of the digestate. In addition, the framework and infrastructure for an improved supply of dairy waste for biogas production should be expanded, as well as the knowledge of farmers about the related issues and how to deal with them.

Publications, posters and presentations

Seidel, K.; Wyss, GS.; Klocke, P. (2009) Machbarkeitsabklärungen zur Inaktivierung von antibiotikahaltiger Milch. Abschlussbericht; FiBL Forschungsinstitut für biologischen Landbau

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