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Assessment of the Potential Risks Associated with the Proposed Use of Composted Waste from the Production of Bacitracin as a Soil Additive

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Authors' contributions

This work was carried out in collaboration among all authors. The opinion has been assessed and approved by the Panel on Biological Hazards of VKM. All authors read and approved the final manuscript.

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Grey Literature

ABSTRACT

Bacitracin is a hexapeptide antibiotic, with a substituted thiazolidine nucleus, produced by some strains of *B. licheniformis*. It is mainly active against Grampositive bacteria, although many differences in susceptibility exist among the bacterial species.

Alpharma A.S. Norway has produced bacitracin for use in human medicine since 1954. Until 1998, the fermentation waste from the production of bacitracin was added to animal feed in some European countries, including Norway, to promote growth of pigs and domestic fowl. In 1998, fermentation waste containing bacitracin as a food additive was banned by the EU to reduce the risk of developing bacitracin-resistant bacteria in animals, and the subsequent possible transfer of such bacteria to humans via the food chain. Use of fermentation waste containing bacitracin as a feed additive has not been officially banned in Norway, but it is no longer used for this purpose. Alpharma is therefore actively seeking alternative uses for their production waste. As the waste material is rich in nutrients, the company proposes that it could be developed as a soil additive by

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fermenting it with chipped bark and lime. The Norwegian Food Safety Authority (Mattilsynet) commissioned the Panel on Biological Hazards of the Norwegian Scientific Committee for Food Safety (Vitenskapskomitéen for mattrygghet) to develop a risk assessment regarding the use of composted waste material from Alpharma's production of bacitracin, as a soil additive. In response, an ad hoc Working Group of experts was appointed with the mandate to draft a risk assessment which should include the following elements: assessment of risk to human health and/or the environment in relation to residual content of bacitracin in the finished soil additive product and assessment of the risk in relation to dissemination of the production strain and antimicrobial resistance genes. The Panel on Biological Hazards concludes that the risks to human health and the environment posed by residual bacitracin present in the finished product are minimal. Furthermore, as Bacillus licheniformis is considered essentially non-pathogenic, occurring rarely as an opportunistic pathogen, the risk posed by this bacterium to human health or the environment is very low. It is reasonable to assume that during the early composting process horizontal transfer of bacitracin and erythromycin resistance genes, from the *B. licheniformis* producer strain to environmental bacteria, will exceed background levels. However, this is considered to represent a low risk to human health and the environment.

Keywords: VKM; assessment; Norwegian Scientific Committee for Food Safety; bacitracin.

Available:
https://vkm.no/download/18.d44969415d027c43cf1f6ab/1519723735955/Assessment%20of%20the%20potential%20risks%20associated%20with%20the%20proposed%20use%20of%20composted%20waste%20from%20the%20production%20of%20bacitracin%20as%20a%20soil%20additive.pdf

NOTE:

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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