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Project Summary Report

Enriching Meat and Milk with Omega 3 Oils Using Fish Hydrolysate

Jim Gibbs, Lincoln University, and United Fisheries.

Introduction


United Fisheries produce a protein and oil rich hydrolysate from the by-products of the fish processing factory. The process uses the fish products with a plant enzyme to break the material down, then a common organic acid to stabilise the product at a low enough pH to prevent spoilage. The product can be used as a fertiliser or as a stock feed supplement, and Lincoln University in conjunction with United Fisheries conducted a five year research project on the production and use of product in New Zealand livestock systems, jointly funded by the national seafood industry (seafood Innovation Ltd) and United Fisheries.

This project work assessed the efficacy of feeding the product to cattle and sheep to enrich the Omega 3 content in the meat and milk. Omega 3 oils have been recognised for their positive human health attributes, and have been enriched in meat and milk of ruminants internationally by the feeding of fish products, which are a rich natural source of these oils. The research project fed United Fisheries fish hydrolysate to lambs, dairy cows and dairy sheep in standard commercial farms, then analysed the meat and milk respectively for Omega 3 content.

Meat and Milk Enrichment Trials

The meat of lambs fed the fish hydrolysate product as a minor component of their diet in a mixed supplement to their pasture was increased more than fivefold in Omega 3 content, up to 7.5mg/ g DM. This compares favourably with recent research from the USA that has demonstrated that the beef of feedlot cattle fed diets with formal, specialised Omega 3 supplements could have an Omega 3 content of approximately 5.5-6.0mg/ g DM. The US enriched beef is sold as a premium, healthy meat, and it would appear that the use of United Fisheries fish hydrolysate as a supplement in lambs represents a similar opportunity for New Zealand farmers.

Dairy cows in a large commercial herd in the South Island were fed United Fisheries fish hydrolysate at a standard dose through an automated system at milking. The milk Omega 3 content was increased by three to tenfold by the addition of the fish hydrolysate to the diet, without any milk taint observed. The same approach was used in milking sheep in a large commercial operation, with similar trends in Omega 3 content observed in the milk. Both cattle and sheep milk enrichment with Omega 3 oils represent a potential new method of accessing opening markets for pasture based milk production systems here in New Zealand.



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