

Benefits of omega-3 fed cows passed onto consumers

24/05/2007 - **Cows fed a diet rich in omega-3 produce enriched meat that has significant benefits for consumers, suggests new research from Kansas State University.**

The enrichment of meat products with [omega-3](#) and its addition to animal feed to boost levels in animal-derived produce is seen by some as having potential in bridging the gap between recommended and actual intake in the modern population.

"Our study was the first to look at the effects of eating a high-ALA diet of beef from cattle fed flaxseed and the impact on long-chain omega-3 fatty acid composition of EPA and [DHA](#) in the membrane phospholipids of the heart and liver using a rat model," wrote researchers.

The current recommended intake of very long-chain omega-3 polyunsaturated fatty acids (PUFA) in the UK is 450mg per day. Yet on the basis of food consumption surveys, researchers estimate that the current mean intake amongst adults is only 282 mg per day, of which eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) contribute 244mg.

In the US, individuals with heart disease are recommended to consume one gram of EPA plus DHA every day.

The new research, published in the journal *Nutrition Research*, suggests that raising cattle on flaxseed diet (10 per cent), rich in alpha-linolenic acid, leads to increases in the omega-3 content of the meat, which could then be passed on to the consumer.

Researchers compared flaxseed-fed cattle and corn-fed cattle and found omega-3 fatty acids levels in the cooked beef was double in the flaxseed-fed animals than that found in their corn-fed counterparts (83 versus 44 milligrams per 100 grams).

The researchers then fed 20 Sprague-Dawley rats either a diet containing beef from the flaxseed-fed cattle or beef from the corn-fed cattle for five weeks.

They report a statistically significant increase in the amount of DHA in the livers of the rats fed the omega-3-enriched beef diet compared to controls (168 versus 67 nanomoles per 100 grams, respectively). Rats fed the omega-3-enriched beef diet also had significantly lower heart levels of arachidonic acid (AA), compared to controls (81 versus 164 nanomoles per 100 grams, respectively). AA is metabolised to produce prostaglandin E2, a pro-inflammatory compound.

Rats fed the omega-3-enriched beef diet were reported to have significantly lower blood cholesterol levels, relative to controls, wrote Medeiros - 77 versus 107 mg/100 mL, respectively.

Researchers calculated that, in human terms, two 85 grams (three ounce) servings

of beef a day would provide a daily omega-3 dose of 140 mg.

"It would appear to be important to try and improve the omega-3 fatty acid content of the entire food supply when possible to help reach this goal," said the researchers.

"Improving the nutritional quality of beef, in this case omega-3 fatty acids, by simply changing a part of the cattle's diet was demonstrated," they concluded.

Commenting independently on the research, Professor Ian Givens, director of Reading University's Animal & Nutritional Sciences Research Group told **NutraIngredients.com** that the data was generally very positive.

"It confirms what we knew that cattle given diets enriched with alpha-linolenic acid can convert some of it to EPA and DHA. This is probably the main effect seen in this study although some conversion may well have been done by the rats.

"There have been very few studies which have examined the effect of modifying animal-derived foods so this is welcome and certainly points to potential benefits of this approach to public health," he said.

Professor Givens added a note of caution however, stating that rats are not humans although they are often used as a model, and that beef consumption in the UK has declined considerably.

"I also suspect that the amount of beef in the rats' diets was much higher than would normally be in our diet," he added.