

# Beef

## AS A FUNCTIONAL FOOD

**PROJECT TITLE** Effect of L-carnitine and Fatty Acids on Content of Functional Lipids in Meat

**PROJECT LEADER** Shannon Scott, Brandon Research Centre, Agriculture and Agri-Food Canada with Dr. Fernando Hernadez, Dr. Paul McCartney and Dr. Katherine Buckley



North Americans are showing a growing interest in health and nutrition. Food producers are responding to this trend and providing products with enhanced nutritional benefits – “functional foods”. Health Canada defines a functional food as “a conventional food that is consumed as part of a usual diet, and is demonstrated to have physiological benefits and/or reduce the risk of chronic disease beyond basic nutritional functions, i.e. they contain bioactive compound”. According to Agriculture and Agri-Food Canada, the global functional food and nutraceutical market is growing at a rate that is outpacing the traditional processed food market.

Conjugated linoleic acid (CLA) is a nutrient found in great abundance in the meat and milk of ruminants, such as cattle and sheep. It is produced as ruminants digest the fatty acids in feed. CLA is showing to have benefits to humans: there is some indication that it may help control the weight of people who consume it and it has also been found to have a strong anti-cancer effect. Therefore, beef with enhanced CLA could potentially be marketed as a functional food.

Previous studies have shown that CLA levels in beef from cattle finished on pasture are higher than levels



in beef from cattle finished in feedlots on high grain diets. Since finishing cattle on pasture is not practical for most beef operations, this study was completed to find a way to increase CLA in beef through the addition of sunflower seeds to the finishing ration. Sunflower seeds are rich in linoleic acid, one of the fatty acids converted to CLA in ruminant digestion.

# Beef

## AS A FUNCTIONAL FOOD *continued*

Sunflower seeds are also widely grown in Canada, with 75,000 hectares planted in 2006.

L-carnitine is another nutrient naturally found in animal products. L-carnitine has been shown to increase fat deposits, or marbling, in beef. This study also examined the effect that adding L-carnitine to finishing rations would have on increasing CLA in beef.

The 64 steers examined in the study grazed pasture from May to September. Sixteen of the steers were slaughtered immediately off pasture and their ribeye steaks tested for CLA content. The remaining 48 steers were assigned to one of four diets: grain ration with no sunflower seed; grain ration with sunflower seed (14 per cent of dry matter); grain ration with L-carnitine but no sunflower seed; grain ration with

at 28 day intervals and the ribeye steaks were tested for CLA content.

The results showed that steers finished on feedlot rations with no sunflower seeds had the lowest levels of CLA in their meat while steers slaughtered directly off pasture had 50 per cent more CLA in their meat



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sunflower seed (14 per cent of dry matter) and L-carnitine. Four steers from each diet were slaughtered

than animals finished on feedlot rations with no sunflower seeds. However, feedlot finished steers with sunflower seeds in the ration had 50 per cent more CLA in their meat than those slaughtered directly off pasture. The addition of L-carnitine was shown to have no effect on the CLA content of meat.

This study shows that the addition of sunflower seeds to feedlot rations increases CLA content of beef even above that of grass-finished beef, indicating a potential to market CLA-enhanced beef as a functional food.

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**CANADIAN CATTLEMEN'S ASSOCIATION**

#310, 6715 - 8th St. NE, Calgary, AB T2E 7H7

Tel: (403) 275-8558 Fax: (403) 274-5686