Changing cows' diet could help tackle heart disease

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Adding oilseed to a cow's diet can significantly reduce the harmful saturated fat found in its milk without compromising the white stuff's nutritional benefits, according to research by the University of Reading.

The researchers found that supplementing a cow's diet with oilseed variants cut the amount of saturated fat in its milk by over a quarter. Crucially it also increased both cis-monounsaturated fats and natural trans fats, both thought to have health benefits.

Cardiovascular disease is the UK's single biggest killer, responsible for more than 88,000 deaths each year. A key Government recommendation in tackling heart disease is to reduce the amount of saturated fat in our diet.

Milk and dairy foods are the largest single source of saturated fatty acids (SFA) in the UK diet. However they are important foods that provide essential nutrients, so reducing the amount of milk we drink may be counter-productive. With milk consumption in the UK falling there is a need to reverse this trend.

The three-year project, funded by the Diet and Health Research Industry Club (DRINC), consisted of two main studies.

Twenty two commercial dairy farms in the south west of the UK included three oilseed supplements, or a commercially available fat supplement, in the diet of their dairy cows over a month. After this period, the saturated fat content of milk fat decreased by an average of 5%, without altering the overall fat content of the milk. At the same time, monounsaturated fats were increased by an average of 9 %.

The second study[1], in the form of several experiments, took place at the University of Reading's farm. The experiments looked in detail at the effect of different fats in the diet of the dairy cow.

Results showed that adding a novel oil-based supplement to a cow's diet cut saturated fat by 27 % and increased both cis-monounsaturated fats (+ 55 %) and trans fats.

Professor Ian Givens, the University of Reading's DRINC project leader, said:

"Adult UK milk consumption in the UK has dropped from about three litres per week in the 1970s to less than one litre. This is a big concern. Milk and dairy are vital components of our diet, providing about a quarter of our daily protein needs and up to 60% of vital nutrients such as calcium and phosphorus. Consumers need to regain faith in milk.

"There is evidence that replacing a proportion of the saturated fats in milk with mono or polyunsaturated fats improves human cholesterol levels once consumed. Both our studies showed adding oilseed to a cow's diet could be the answer."

The success of these studies has paved the way for Reading experts to begin a new project involving human participation. Starting this month the study, funded by the Medical Research Council (MRC), will examine whether or not SFA –reduced milk and dairy could reduce the risk of cardiovascular disease.

Professor Julie Lovegrove who is leading the MRC study confirmed: "Very few studies of this type have been undertaken. Reading is in the unique position of having the expertise and facilities to perform such a multidisciplinary project. After producing SFA-reduced milk at our farm, we will then make cheese and butter from this milk in our Food Processing Plant. The effects of consuming these SFA-reduced dairy foods compared with normal products will then be carried out at our Hugh Sinclair Unit of Human Nutrition."

More information: [1]Incremental effect of a calcium salt of cis-monounsaturated fatty acids supplement on milk fatty acid composition in cows fed maize silage-based diets was published in the *Journal of Dairy Science* 2013 May;96(5):3211-21. DOI: 10.3168/jds.2012-6211. Epub 2013 Mar 15.

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