Insoluble fibre aids obesity, diabetes prevention says study

By Laura Crowley

10/19/2007- **A breakfast high in insoluble fibre could aid weight loss by reducing appetite, lowering food intake and reducing the glycemic response to a meal consumed 75 minutes later, according to new research.**

The human study, based on 31 healthy young men, found that consuming insoluble fibre at breakfast time reduced subsequent food intake by 15.5 per cent.

The research results, published in the *American Journal of Clinical Nutrition*, help to explain why the consumption of insoluble fibre, as opposed to soluble dietary fibre, may have a role in controlling obesity and related metabolic disorders such as diabetes.

Insoluble fibre contains cellulose, hemicellulose and lignin and cannot be dissolved in water, unlike soluble fibre. It is found in wheat or cereal bran and in most vegetables and fruits.

Consumption of insoluble fibre has previously been associated with a reduced risk of obesity and diabetes, but the biological mechanism underlying the benefits has only been assumed.

The assumption was that the fibre reduced the glycemic response (a rise in blood glucose), thereby increasing satiety and decreasing energy intake. A lower glycemic response decreases the demand for insulin, therefore reducing the risk of type 2 diabetes.

However, most studies that have tested the responses to dietary fibre have involved highly complex foods that contain both soluble and insoluble fibre as well as other biologically active substances.

In this study, Rania Samra and colleagues from the University of Toronto conducted two experiments on men aged between 20 and 35.

In experiment one, 16 men were divided into four groups and given one of four breakfasts. The first was a cereal with 33g of insoluble fibre, the second contained 1g of fibre, the third was white bread (which typically contains 0.56g of fibre), and the last was a control breakfast comprising only water. All three were served with milk.

Blood glucose levels were measured at 15 minute intervals before and after the breakfast up to 75 minutes post breakfast, and subjective appetite and total food intake was recorded.

Food intake was lower for the high fibre cereal (937 kcal) and white bread (970 kcal) groups compared to the low fibre cereal (1109 kcal) groups. Appetite was lower in the high fibre and low fibre cereal groups compared to the white bread groups.

In experiment two, which involved 15 men, a pizza meal (850 kcal) was consumed 75 minutes after the breakfast, and blood glucose levels again then taken at 15 minute intervals.

Blood glucose was raised in the low fibre and white bread group, but the time patterns of raised glucose levels were different between the two. Blood glucose levels remained constant in the high fibre group.

The authors concluded that a high fibre ready-to-eat breakfast cereal suppressed appetite, reduced food intake and improved the glycaemic response to a meal consumed 75 minutes later.

The recommended fibre consumption in the UK is 18g per day. In France it is 25 to 30g, and in Germany it is 30g. In each of these countries, average consumption is lower than these levels.

These results indicate the importance of fibre in a healthy diet and the benefits of functional and weight management foods having high insoluble fibre content.

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