

Medicine by John Grauerholz, M.D.

Are high fiber diets worth the gas?

The fixation on the virtues of bran is not new, but bran does not play a key role in lowering cholesterol.

An article in the Jan. 18 *New England Journal of Medicine* deflates the claims made for oat bran as a cholesterol-lowering agent. It reports on a study done at the Brigham and Women's Hospital in Boston to figure out the cause of the reductions in serum cholesterol associated with consumption of oat bran supplements. The authors describe the study as follows:

"Previous studies have shown that supplementation of the diet with oat bran may lower serum cholesterol levels. However, it is not known whether oat-bran diets lower serum cholesterol levels by replacing fatty foods in the diet or by a direct effect of the dietary fiber contained in oat bran. To determine which is the case, we compared the effect of isocaloric supplements of high-fiber oat bran (87 grams per day) and a low-fiber, refined-wheat product on the serum lipoprotein cholesterol levels of 20 healthy subjects, 23 to 49 years old. After a one-week baseline period, during which they consumed their usual diets, the subjects were given each type of supplement for six-week periods in a double-blind, crossover trial."

A double-blind crossover study is one in which both groups participate in both parts of the study, at different times. This eliminates the possibility of undetected differences between the groups being responsible for differences found between two treatment programs. Each group serves as both a test group and a control.

The researchers discovered no significant difference in cholesterol levels whether the subjects were on a high

fiber supplement or a low fiber supplement. Both supplements lowered cholesterol levels by the same amount from the base line level.

The reduction in serum cholesterol occurred because the subjects ate less saturated fat and cholesterol while consuming either supplement. This reduction in fat consumption completely accounted for the reductions in serum cholesterol.

The fixation on the virtues of bran is not new. It dates almost from the beginning of the republic, or at least from the time the process of producing milled white flour from wheat was first introduced. "Put back the bran," thundered Samuel Graham, inventor of the Graham cracker and the first of the roughage riders, in 1830. Graham was a vegetarian, a homeopath, and a fundamentalist preacher. In other words, he was very typical of the current of pragmatism inherent in American culture, then and now.

More recently, Dr. Denis Burkitt and Dr. H.C. Trowell, two missionaries working in Uganda, attributed the rarity of "Western" diseases in the Africans they treated to the high percentage of roughage in the African diet. They developed the "fiber hypothesis" that these diseases did not occur in Africans because their diets contained much roughage, which had been purified out of Western diets.

The flip side of this argument has been underemphasized. To wit, what are the potential *negative* effects of excessive roughage? In Uganda, for example, Trowell described the syndrome of infant malnutrition, known

as Kwashiorkor. Studies in the United States have suggested that excessive bran ingestion can result in malabsorption of several vitamins.

In the Boston study there was one significant difference between the two supplements. While only one person on the low-fiber supplement complained of constipation, 15 of the 20 subjects had many complaints while on the high-fiber supplement. These included flatulence, cramping, bloating, loose stools, and diarrhea.

The authors note that it is possible that the oat bran they used may have had a small cholesterol lowering effect that was not detected by the study. However, "Such a small decrease in response to such a large daily intake of oat bran is unlikely to be important in a practical sense, particularly in view of the uncomfortable gastrointestinal reactions produced.

"Decreases in dietary fat and cholesterol cause serum cholesterol levels to decline by a similar percentage in persons with levels in the upper or lower portions of the range. The clinical usefulness of oat bran in patients with hyperlipidemia [elevated levels of fat in the blood], even if a true effect on serum cholesterol levels is confirmed in controlled trials, would seem to be limited by the large amounts of oat bran that would be needed (more than 100 grams per day), the likely adverse gastrointestinal effects, and the monotony of the overall diet needed to provide such a high daily intake of oat bran."

The bottom line is that if you replace fat calories by carbohydrate calories, you probably will lower your serum cholesterol if it is normal or elevated. More important, if you use low-fiber white flour products, instead of the bran muffins so beloved of the roughage riders, you can do it without gassing out your neighborhood or constantly trotting off to the crapper.