

# Improving Medical Statistics and Interpretation of Clinical Trials

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## Critique of the meta-analysis subsequently written by the senior author of initial flawed oat bran study

*A subsequent meta-analysis<sup>1</sup> concerning the effects of oat bran on cholesterol levels was written by the senior author of the widely publicized flawed study<sup>2</sup> that incorrectly suggested oat bran was without significant effect on cholesterol levels.*

There is a tendency for any person to desire to confirm prior opinions voiced in the literature rather than refuting their own prior results. *The conclusions of a meta-analysis, like any other study, can be presented with a particular slant. The conclusions of this meta-analysis were presented in such a way as to minimize any contradictions with the initial flawed oat bran study published in 1990.*

See right column for a negatively slanted conclusion followed by a positively slanted conclusion for the data from the same meta-analysis.

1. Brown L, Rosner B, Lillett W, Sacks F. Cholesterol-lowering effects of dietary fiber: a meta-analysis. *Am J Clin Nutr* 1999; 69:30-42

2. Swain JF, Rouse,IL, Curley CB, Sacks FM. Comparison of the effects of

## Differing conclusions for the data from the same meta-analysis:

The results of the meta-analysis<sup>1</sup> by the author of the flawed oat bran study<sup>2</sup> can be viewed as a cup half full or half empty, depending on the bias of the authors. (The conclusions of a meta-analysis like any other study can be presented with a particular bias.)

## Negative conclusions of the original authors:

The authors of this meta-analysis<sup>1</sup> conclude that "increasing soluble fiber can make only a small contribution to dietary therapy to lower cholesterol." (Ingestion of 3g of soluble oat fiber resulted in a decrease of .13mmol/L in total cholesterol LDL cholesterol.) They note that soluble fiber from a total of three bowls (28g/bowl) of oatmeal is required to achieve a total of 3 g of soluble fiber.

## Alternative positive conclusions for same data:

An alternative positive statement of the conclusions for this same data would be the following:

This meta-analysis indicates that an intake of 3g of oat soluble fiber can result in a 2% reduction in cholesterol, which has been estimated to correlate to a 4% reduction in cardiovascular disease.<sup>3</sup>

Similarly, an intake of 6g of fiber can result in a 4% reduction in cholesterol which has been estimated to result in an 8% reduction in cardiovascular disease.<sup>3</sup>

This would be a significant benefit to public health.

oat bran and low-fiber wheat on serum lipoprotein levels and blood pressure. N Engl J Med 1990; 322:147-52.

3. National Cholesterol Education Program Expert Panel on Detection, Evaluation and Treatment on High Blood Cholesterol in Adults. Report of the National Cholesterol Education Program Expert Panel. Arch Intern Med 1988;148:36-9

Specifically, this meta-analysis indicated that 3g of soluble oat fiber can result in a decrease cholesterol of .13mmol/L (5mg/dL), while 6 g of soluble fiber can result in a decrease of .26mmol/L (10mg/dL) decrease in cholesterol.

Additionally, it would be noted that a *single* standard 40g serving of oatmeal of Quaker Oats Old Fashioned Oatmeal contains 2g of soluble fiber and a *single* 40g standard serving of Quaker Oat Bran hot cereal contains 3g of soluble fiber per serving.

Both versions of these conclusions are slanted, but in opposite directions.