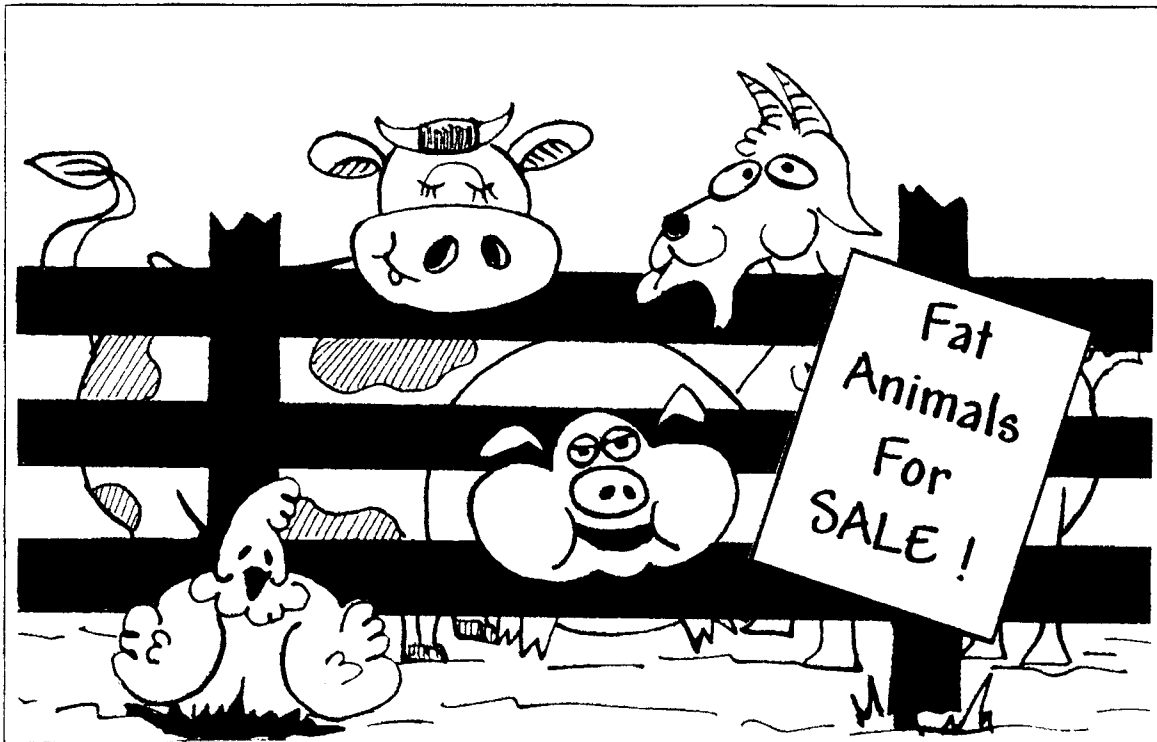


Trick or Trap 18

Soybeans or Animal Fat?



Too much LDL or “bad” cholesterol is believed to be a major risk factor in coronary heart disease. Much research has been conducted on how to lower this type of cholesterol with special attention to the effects of cholesterol-lowering drugs and the effects of diet.

In particular, soybean protein, which comes in forms such as tofu, has been of interest as a possible agent for lowering cholesterol. Recently, statisticians examined 38 previous studies on the effects of a soybean-rich diet. Taken as a whole, these studies indicated that *substituting soybean products for animal fat* even for a short time cuts cholesterol levels by about nine percent.¹ Although drugs typically are somewhat more effective than this, many people would prefer a “natural” cure.

¹ Source: Soy protein diet cuts cholesterol, study finds. *Los Angeles Times*, August 3, 1995, p. A8.

Based on this review of previous studies, one expert stated that increasing consumption of soy equals decreased chances of coronary heart disease. This particular statement is potentially misleading because of *confounding* in the studies. *Confounding* is a scientific term that refers to statistical studies in which there are two or more explanations for a given outcome. In the studies that were reviewed, there was one outcome: reduced cholesterol. However, there are three possible explanations for the outcome:

- (1) increased intake of soy caused it.
- (2) decreased intake of animal fat caused it.
- (3) increased intake of soy *in conjunction with* decreased intake of animal fat caused it.

Why is this important? Because if there are three possible explanations, then there are three possible courses of action people might take to reduce their cholesterol. For example, if explanation number 2 (decreased intake of animal fat) is true, you might not need soy at all—just a decrease in animal fat. On the other hand, if explanation number 3 is correct, eating soy *without* decreasing animal fat may *not* help.

The general principle here is that if two or more treatments are given at the same time to the same subjects in an experiment, there will be a confounding that makes it impossible to definitively identify the effects of each treatment separately. This problem could have been avoided in the experiments if four groups had been established with:

- (1) Group 1: Maintains a normal diet but supplementing it with soy.
- (2) Group 2: Maintains a normal diet by reducing animal fat.
- (3) Group 3: Supplements diet with soy and reduces animal fat.
- (4) Group 4: No change in diet (control group).