

Effects of Alcohol on Fat Metabolism

The main problem with alcohol is not the number of calories it contains but rather the effect it has on fat metabolism. A recent study, for example, has shown that even small amounts of alcohol have a large impact on fat metabolism.

In this study, eight men were given two drinks of vodka and lemonade separated by 30 minutes. Each drink contained just less than 90 calories. Fat metabolism was measured before and after consumption of the drink.

For several hours after drinking the vodka, whole body lipid oxidation (a measure of how much fat your body is burning) dropped by 73%.

The reason why alcohol has this dramatic effect on fat metabolism has to do with the way alcohol is handled in the body. When alcohol is consumed, it readily passes from the stomach and intestines into the blood and goes to the liver. In the liver, an enzyme called alcohol dehydrogenase mediates the conversion of alcohol to acetaldehyde.

Acetaldehyde is rapidly converted to acetate by other enzymes. So rather than getting stored as fat, the main fate of alcohol is conversion into acetate, the amount of acetate formed is dose dependent on the amount of alcohol consumed. For example, blood levels of acetate after drinking the vodka were 2.5 times higher than normal. And it appears this sharp rise in acetate puts the brakes on fat loss.

The type of fuel your body uses is dictated to some extent by availability. By severely limiting your carb intake your body is forced to rev up its fat burning machinery, so that you become fat adapted, and increase the use of protein for some of the functions, such as anaplerosis, that carbs are usually heavily involved in.

In other words, your body tends to use whatever you feed it, and after a time becomes adapted to the macro nutrient intake. Unfortunately when acetate levels rise, your body burns the acetate preferentially, since acetate is basically the same product of beta oxidation of fatty acids and glycolysis (glucose to pyruvate to acetate), but it doesn't require the metabolic work to produce.

So the body simply burns the acetate first, and with the rapid rise seen with alcohol intake, basically pushes fat oxidation out of the metabolic equation.

Because acetate is readily formed from alcohol it can be worse than taking in carbs as far as affecting fat metabolism. That's because glucose has to be sequentially metabolized through various steps to form acetate while acetate is formed from alcohol in just a few steps.

Also alcohol, because it can be considered part way between carbs and fats, has more calories than carbs. That's why even the low carb beers contain less than 100 calories even though they only have about 2.5 grams of carbs and .5 grams of protein. While the carbs and protein only make up 12 calories, the 12 grams of alcohol make up the remaining 80 or so calories.

- 9 calories per gram of FAT
- 4 calories per gram of PROTEIN
- 4 calories per gram of CARBOHYDRATE
- 7 calories per gram of ALCOHOL

Alcoholic beverages contain alcohol, some or no carbs and calories but not much else.

In summary, it's important to realize that even the odd drink or two can be counter productive in the low carb phase of dieting for fat loss and especially so in the induction stage of a new dieting plan.