

A SIP OF WINE, PERHAPS?

James H. Carraway, M.D.
Eastern Virginia Medical School

For thousands of years, many fruits, vegetables, beans, and meats have been fermented. The process of fermentation is conversion of water and glucose to produce ethanol (alcohol). If this is soybean mixture, it becomes natto or miso, but if it is grains such as rye or barley, it can be whiskey or beer. In the case of grapes or other fruits, it becomes wine or brandy. Most of us enjoy the pleasure of a glass of wine, but a smaller percentage of people drink “hard” alcohol such as whiskey or brandy. However, no matter which one you drink you should be aware of the effects of alcohol on your mental status, your long-term brain function, and your health risks.

First of all, moderation drinking is two drinks a day for men and one drink a day for women. This is because men have a lower body fat and larger mass muscle that metabolizes the alcohol faster than it does for women. Alcohol is a solvent and has an effect on the brain and nerve tissue. It passes through the tiny cell walls and is capable of denaturing or destroying the protein in the cells, thereby reducing cellular function. It also has a short-term effect of reducing function in these cells, thus reducing mental clarity and motor function. Clinically, it boosts the appetite, improves morale, stimulates social interaction, and can help sleep. However, if swallowed on an empty stomach it can be absorbed within minutes and you can get a very light effect of inebriation. If you also eat, the absorption is slowed and the effect of alcohol has a longer onset.

Interestingly, alcoholic drinks do cause the brain to shrink. Also, because metabolism of alcohol uses up some of the B vitamins, peripheral neuropathy or nerve damage may occur. Abstinence from alcohol along with good nutrition and supplemental B vitamins can restore some brain and peripheral neurological functions.

If considering all of alcohol’s effects on you, you have to really look at all of its aspects. First, there is the pleasure of taking alcohol, but there is the downside. The difference between small and large amounts of alcohol intake and the years of drinking it certainly makes a difference on the quality of life concomitant with this. In terms of the negative effects, short-term ones are traffic accidents and aggressive behavior. Long-term effects are mental disorders, memory loss, organic brain impairment, and medical problems including liver dysfunction. Additionally, there are negative effects of alcohol usage on children, both in newborns whose pregnant mothers drank alcohol and as teenagers or younger when alcoholic beverages may be drunk regularly.

Alcohol does cause mid-abdominal fat to develop; and even when taken with other carbohydrates, the alcohol is used as “fuel for the body” before the other carbohydrates are metabolized. This leaves the other carbs to be converted to fat which is mostly deposited around the waist area, causing a “beer belly” in men and a heaviness in the waist of women. Breast cancer risk is increased with alcohol intake. Alcohol promotes

the secretion of folic acid, depleting the body's store and thus increases cancer risk. Wine promotes the excretion of minerals, including calcium, phosphates, magnesium, and zinc. This has a negative overall influence on the body's metabolism.

However, in wine (but not whiskey), there are good protective chemicals such as polyphenols and flavonoids as well as resveratrol. In particular, resveratrol has been recently touted as being a very strong antioxidant. If these nutrients are taken in with wine, the alcohol can neutralize the health benefits because it creates oxidative stress which can be damaging to the liver and pancreas. Red wine has 5 times the amount of nutrients and about 1/4th the amount of sugar found in white wine.

The liver has an enzyme called alcohol dehydrogenase, which metabolizes 80% of the alcohol absorbed. If you acquire fatty liver from long-term drinking, the amount of alcohol dehydrogenase activity is reduced and therefore the amount of circulating alcohol is higher for a longer period of time. Fasting reduces the amount of alcohol dehydrogenase available so that if you fast for a day you cannot metabolize alcohol as quickly. Also, fasting and drinking alcohol increases the levels of methanol and formaldehyde in your body, which can lead to a worse "hangover." One drink of alcohol takes about 1-1/2 hours to metabolize. Walking or exercise doesn't reduce your alcohol blood level because muscle cannot metabolize alcohol directly, only glucose. Hangovers are specific to the particular type of alcohol ingested -- whiskey, wine, beer, and other alcohol -- due to dehydration of the brain and failure to break down the normally produced methanol and formaldehyde, which causes the headaches.

Interestingly, alcohol is toxic to skeletal and cardiac muscle. An alcoholic's heart at death weighs about two times as much on autopsy as a normal person. Alcohol can also cause relative or absolute dementia. You can have 2%, 20%, or 50% reduction in mental function by chronic alcohol drinking. Of course, alcohol also increases cancer of the breast, mouth, throat, esophagus, rectus, and lungs. If a person smokes in addition to drinking, the cancer risk is increased by a factor of 10 or more. Cancer of the rectum is common in people who drink more than 15-oz of beer a day. Alcohol in general can promote Type II diabetes, hepatitis, impaired immune system, impaired memory, impaired balance, and even osteoporosis.

If you choose to drink alcohol, do so in moderation at a slow pace, drink mostly red wine in small quantities with food, and don't drive or perform other potentially hazardous activities at that time. Now, if you will excuse me, I think that I will enjoy a small glass of cabernet along with some cheese and nuts!