

ALCOHOL: HEALTHFUL BEVERAGE OR TOXIC BREW?

Risk vs. Benefits

Some people believe strongly that alcohol consumed in moderation offers health benefits. Others believe that alcohol is toxic to the body and only contributes to obesity and addiction. So, let's take a closer look.....

FIRST, the Caloric Comparison of the Energy Nutrients:

<u>One Gram</u>	<u>Calories</u>
Protein	4
Carbohydrate	4
Alcohol	7
Fat	9

Calories translate into fuel and energy for our bodies to function. Protein, carbohydrate and fat are the 3 recognized energy nutrients for our bodies, along with the non-caloric nutrients of water, vitamins and minerals which allow our bodies to digest, absorb and utilize our energy nutrients (see the pamphlets "Vitamins" and "Minerals" for details).

Alcohol is considered to be an "empty calorie" food because it provides negligible amounts of nutrients other than calories. Since it often is consumed in place of nutrient-rich foods and directly interferes with the body's absorption, storage and use of vitamins and minerals, it is considered to be a nutrient antagonist.

The Metabolism of Alcohol

Unlike the other fuel sources of protein, fat and carbohydrate from foods, alcohol cannot be stored in the body and must be given priority in the metabolism hierarchy. Some metabolism of alcohol begins in the stomach by the enzyme alcohol dehydrogenase. A very small amount of alcohol is excreted through sweat, saliva, urine and lungs. The liver is the primary organ site for the metabolism of alcohol. Through an oxidative process, the body is able to prevent alcohol from accumulating and destroying cells and even entire organ systems. Enzymes facilitate the conversion of alcohol to acetaldehyde to acetate and eventually to carbon dioxide and water. When alcohol is consumed very slowly or with a meal, the liver is better able to handle the metabolic demands.

There is a difference between men and women in the metabolism of alcohol. A woman will have a higher blood alcohol concentration (**BAC**) after consuming the same amount of alcohol as a man. More alcohol is actually oxidized by gastric (stomach) tissue in men, since they produce more of the alcohol dehydrogenase enzyme in the stomach. When more of the consumed alcohol is metabolized by the stomach, less remains to be absorbed and require detoxification by the liver. Women generally have less total body water and muscle mass than men, accounting for an additional dilution factor difference between men and women. Generally speaking, women metabolize only 10% of the alcohol ingested compared with 30% of alcohol ingested by a man before alcohol reaches general circulation. Since a woman's body is able to metabolize less alcohol, women are advised to drink one serving to a man's two servings of alcohol. Women who drink alcohol are more susceptible to heart and brain damage, as well as liver disease. There is also increasing evidence of the correlation between alcohol consumption and breast cancer in females.

A healthy liver oxidizes less than 1 ounce of hard liquor or 8-12 ounces of beer per hour. A BAC of 0.08 constitutes legal intoxication. "A 160-pound man will have a BAC of about 0.04 percent 1 hour after consuming two 12-ounce beers or two other standard drinks on an empty stomach" (<http://www.medicinenet.com/script/main/art.asp?articlekey=16745>). In a smaller individual, one serving of alcoholic beverage can impair one's ability to steer a vehicle and respond quickly to traffic situations. One's BAC is determined by how quickly alcohol is absorbed, metabolized and excreted and is influenced by factors including gender, race, amount of food consumed, and one's drinking patterns and medications. Once a person stops drinking alcohol, the BAC begins to drop by about .01% per hour. Time, rather than cold showers and coffee, rids the body of alcohol. Trying to sober up a person more quickly can lead to serious consequences by convincing the individual that the intoxication has passed.

Potential Benefits of Alcohol Consumption

It is not uncommon for a person to drink a 4-6 oz. glass of wine with dinner to assist with unwinding from the day. Some recent studies on alcohol consumption and health suggest that a person may be better off if he/ she consumes a modest amount of alcoholic beverage daily, as opposed to none or too much. The focus of the possible healthful aspect of small servings of alcohol in the diet relate to heart disease prevention. Red wine, for example, contains substances which lower plasma fibrinogen levels that contribute to the formation of blood clots. Alcohol consumption is also associated with higher HDL (good) cholesterol levels. High density lipoproteins (HDLs) are known to carry potentially harmful cholesterol back to the liver for excretion from the body. These substances also can relax blood vessel walls and thereby reduce blood pressure. However, excessive alcohol consumption is related to high blood pressure, arrhythmias, congestive heart failure and stroke. Resveratrol, a polyphenolic compound found in grapes, red wine, purple grape juice, peanuts and some berries, is being studied to better understand how much of a role it plays in our health (<http://www.mayoclinic.com/health/mediterranean-diet/CL00011>).

Presently, there appears to be some benefit to a regular, very modest consumption of some alcohol, but the direct cause/ effect relationship is unclear. It is clear that those who choose to drink alcohol must do so in moderation (up to one drink/ day for women and up to two drinks/ day for men).

Health Concerns

- Dangerous interactions with many prescription and over-the-counter (OTC) medications
- Interference with nutrient absorption and its all-too-common substitution for foods rich in valuable, needed nutrients
- Alcoholic hepatitis and cirrhosis
- Congestive heart failure, hypertension, arrhythmias and stroke
- Stomach ulcers, pancreatitis and Gastroesophageal Reflux Disease (GERD)
- Neurological Disorders
- Unhealthy weight gain or weight loss
- Sexual dysfunction
- Increased risk of cancer of throat, esophagus, larynx, mouth & breast
- Interference with sound judgment

Energy-Caffeine

Beverage and alcohol-producing companies have responded to the once-novel practice of mixing alcoholic beverages with marketed energy drinks by offering their versions of the dangerous duo. The beer and caffeine combination products are raising health concerns. The new beer energy drinks actually have a higher content of alcohol than beer alone. Initial studies report that consumers may "feel" less impaired, while evidence shows that both visual response and coordination deteriorate as expected. A false sense of confidence and ability may well lead to more injuries and deaths.

Moderate Consumption Defined

Moderate Alcohol Consumption as defined by the Dietary Guidelines for Americans:

- No more than one drink a day for women.
- No more than two drinks a day for men.

One Serving of Alcohol:

- 12 ounces of regular beer
- 5-6 ounces of wine
- 1.5 ounces of 80 proof distilled spirits
- 10 ounces of wine cooler

Over-Consumption Defined

The National Council on Alcoholism and Drug Dependence defines regular over-consumption of alcohol as more than 3 drinks per day.

Keepin' Score?

<u>Type of Drink</u>	<u>OZ.</u>	<u>Calories</u>
Budweiser Beer	12	140
Bud Light Beer	12	110
Miller Light Beer	12	96
Merlot, red wine	4	95
Chardonnay, white wine	4	100
Champagne	4	105
Margarita	5	550
Mudslide	4.5	417
Long Island Iced Tea	8	380
Pina Colada	6	293
Rum and diet Coke	6	65
Mike's Hard Lemonade	12	240
Bacardi Silver drinks	12	225
Bacardi Silver low carb	12	94

*U. of Illinois @ Urbana-Champaign McKinley Health Center
education hand-out (2005)

Nutrition Points

- Alcohol is not essential to the diet.
- Malabsorption of nutrients is common.
- To avoid gastric irritation, eat first; do not introduce alcohol to an empty stomach.
- Dry wines contain less sugar than sweet wines.
- Watch the salty snacks (chips, salted peanuts, popcorn, olives... you know, the ones that bars tend to serve free of charge). They make you thirstier, but alcohol will not quench the body's need for fluids. Alcohol can act as a type of diuretic, interfering with rehydration.
- Eat snacks consisting of fresh fruits and vegetables: apple wedges, radishes, mushrooms, broccoli, cauliflower, grape tomatoes, celery stalks, carrots, bell pepper slices... They minimize calories and maximize health! If you choose a nut, find a fresh roasted, unsalted variety.
- Alcohol mixed with diet drinks containing artificial sweeteners are shown to increase the blood alcohol level more dramatically.

Steer Clear of Alcohol If:

- You are pregnant, lactating or may become pregnant
- You have a personal or family history of alcoholism
- You are taking any medications which interact with alcohol
- You have a specific health condition, such as gastric ulcer, which makes it contraindicated
- You are operating machinery or driving (anything!)
- You suspect malabsorption problems already

Proof Defined

“Proof” refers to the alcohol content of distilled liquors. It is determined by the percent of alcohol multiplied by two.

Examples:

- A product with 50% alcohol=100 proof
- A product with 100% alcohol=200 proof
- White wine averages 12% & red wine averages 14% alcohol
- Beer runs 3-8% alcohol
- “Hard” liquors contain an average of 40% alcohol

Additional Reading & Resources

- http://www.medicinenet.com/alcohol_and_nutrition/article.htm
- <http://www.doitnow.org/pages/120.html>
- <http://www.hsph.harvard.edu/nutritionsource>
- http://www.mckinley.uiuc.edu/Handouts/alcohol_nutrit_101.html
- <http://lpi.oregonstate.edu/infocenter/phytochemicals/resveratrol/>
- <http://www.uwhealth.org>
- <http://www.mayoclinic.com>