

From Mouth to Blood to Behavior

Alcohol's Trip Through the Body

From the mouth to the blood	In the stomach and the small intestine, alcohol—a small molecule—is absorbed quickly into the blood stream.
Processing in the liver	Along with nutrients absorbed from other foods, the first stop is the liver. The liver has the only cells in the body able to convert alcohol to calories. When alcohol is changed to calories, it no longer has any toxic effect on the body. However, the liver can process only a limited amount of alcohol at a time. ¹
To the general circulation	Excess alcohol that the liver can't process spills into the general circulation and is carried to all parts of the body. Because all blood constantly returns to the liver, it has subsequent opportunities to convert the excess alcohol to energy.
To body water compartments	Alcohol in the general circulation is distributed through all the water compartments of the body, primarily inside cells, and in the blood and lymph.
The solution to pollution is dilution.	For diluting the effects of alcohol, bigger is better. Smaller people get a bigger kick from a given dose of alcohol because they have less body water to dilute it.
Body fat & aging don't help.	For a given body weight, women and older people have more body fat and a smaller amount of body water than men and younger people. Hence, a bigger kick from a given dose of alcohol. To make matters worse, they also change alcohol into calories less efficiently.
Alcohol is a depressant.	It induces sleep, lethargy, and relief of pain. For centuries, it was used as an anesthetic. However, it wasn't ideal because it was hard to get the right dose—too little didn't kill the pain, too much killed the patient. Many people drink alcohol for its depressant properties, to relax or to relieve anxiety.
Therefore, it <i>disinhibits</i>.	People often think of alcohol as a stimulant. In reality, its depressant action counteracts inhibitions so that after a few drinks people may act lively and uninhibited. Nonetheless, these individuals are also familiar with the crash later, the underlying depressant effect.
Alcohol disrupts reasoning and judgment first.	This occurs even at concentrations within the "normal" social drinking range and well below the legal threshold for driving under the influence. As alcohol concentrations in brain tissue increase, speech and vision are impaired.
Later, muscles work poorly.	<p>With even higher alcohol concentrations, portions of the brain that control the large muscles are affected. At this point people stagger and weave. Although this may be the clearest outward sign of drunkenness, alcohol has already significantly disrupted behavior and functioning at lower concentrations. At very high concentrations, alcohol completely subdues the conscious brain and the person "passes out."</p> <p>At the highest concentrations, the anesthetic effect reaches the brain centers that control breathing and heartbeat, causing death. Fortunately, a person usually passes out before this can happen, but it is possible to drink fast enough to kill yourself. This has been known to happen during drinking contests.</p>

1. The liver's ability to process alcohol varies from person to person. For example, heavy drinkers can process alcohol a bit more efficiently so they can drink more before they feel drunk. However, this ability to "hold their liquor" does not decrease the toxic effect of alcohol on liver cells, so these individuals are at increased risk for liver disease. Some Asians and Native Americans have genetic variations that cause their livers to process alcohol less efficiently.