

The Biology of a Hangover: Vasopressin Inhibition

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When alcohol is consumed, it enters the bloodstream and causes the **pituitary gland** in the brain to block the creation of **vasopressin** (also known as the antidiuretic hormone). Without this chemical, the kidneys send water directly to the bladder instead of reabsorbing it into the body. This is why drinkers have to make frequent trips to the bathroom after urinating for the first time after drinking.

According to studies, drinking about 250 milliliters of an alcoholic beverage causes the body to expel 800 to 1,000 milliliters of water; that's four times as much liquid lost as gained. This **diuretic effect** decreases as the alcohol in the bloodstream decreases, but the aftereffects help create a hangover.

The morning after heavy drinking, the body sends a desperate message to replenish its water supply -- usually manifested in the form of an extremely **dry mouth**. Headaches result from dehydration because the body's organs try to make up for their own water loss by **stealing water from the brain**, causing the brain to decrease in size and pull on the membranes that connect the brain to the skull, resulting in pain.

The frequent urination also expels salts and potassium that are necessary for proper nerve and muscle function; when sodium and potassium levels get too low, headaches, fatigue and nausea can result. Alcohol also breaks down the body's store of glycogen in the **liver**, turning the chemical into glucose and sending it out of the body in the urine. Lack of this key energy source is partly responsible for the weakness, fatigue and lack of coordination the next morning. In addition, the diuretic effect expels vital electrolytes such as potassium and magnesium, which are necessary for proper cell function.

Different types of alcohol can cause different types of hangover. In the next blog, we'll look at the differences.

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