

A new study shows that binge drinking by teenagers may increase the possibility of osteoporosis in later life. Researchers in the United States say drinking a lot of alcohol over a short period may influence genes involved in bone formation.

Bone biologist John Callaci led a team studying the effects of alcohol on young rats. He teaches and leads a research laboratory at Loyola University's medical school in the state of Illinois. His team's findings appear in "Alcohol and Alcoholism," a publication of Oxford University Press.

Binge drinkers swallow large amounts of alcohol over a short period. One definition says binge drinking happens when a woman has at least four alcoholic drinks in a hurry. For men, binge drinking can mean five drinks in a short time.

America's Substance Abuse and Mental Health Services Administration says binge drinking can begin when a person is about thirteen years old. It says binge drinking generally worsens in young adulthood, and slowly decreases after that.

Professor Callaci's team studied adolescent laboratory rats to learn the effects of binge drinking on their genes. The team injected alcohol into the animals. The injections resulted in a blood alcohol level of zero-point-two-eight. In many American states, a person is legally drunk when the level of alcohol in the blood reaches zero-point-zero-eight.

Some rats received a daily injection of alcohol for three days. The researchers say the alcohol affected about three hundred bone-related genes in those rats. The other rats received alcohol over a similar three-day period, but the injections continued for four consecutive weeks. In these rats, one hundred eighty genes were affected.

The injections added ribonucleic acid, also known as RNA, to the genes of some rats. In the other rats, the RNA in the genes decreased. Ribonucleic acid tells the gene how to make proteins, the substances necessary for bones and other tissues. These changes interfered with the pathway of molecules responsible for building bones and keeping them strong.

Professor Callaci says one of the most worrying findings came thirty days after the injections stopped. At that time, the animals still showed differences in the way their genes were expressed. Thirty days of a rat's life are about the same as three human years.

Professor Callaci says it is not necessarily true that what happens to rats' genes will happen to human genes. But he says the findings suggest that young people's binge drinking could signal problems in their future.

Bones are living tissue. Tissues continually break down and then replace themselves. However, as people get older, more bone breaks down, than gets replaced. The result is that small spaces inside the bone get larger. The shell of the bones also gets thinner.

The word osteoporosis means porous bones, or bones that are not solid enough. The disease harms bones by removing calcium and other minerals from tissue. The National Osteoporosis Foundation says eight of every ten osteoporosis patients are women. It says the disease is most common in Caucasian women over age fifty.

Two years ago, the National Osteoporosis Foundation suggested that doctors extend their list of persons to watch for osteoporosis. The additions included Latina, African-American, Asian and other women. The group also called attention to the fact that men can also suffer from osteoporosis.

Before people develop osteoporosis, they have a condition called osteopenia. Treatment can prevent this condition from becoming osteoporosis. Doctors can identify osteoporosis and osteopenia by measuring the mineral density of a person's bones. In this case, density means the strength of the bones.