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## Cancer Research

In this article, researchers from Cancer Research UK attempted to discover if alcohol consumption damages DNA and if alcohol increases the risk of getting cancer. Mice were given diluted alcohol, which is known as ethanol. Then chromosome analysis was used to examine the damage that is caused by Acetaldehyde.

Acetaldehyde is a harmful chemical that is created when one's body is processing alcohol. The researchers found that Acetaldehyde, a chemical found in alcohol, has the ability to damage DNA located in human blood stem cells. This damage can lead to the rearrangement of chromosomes leading to permanent alterations within one's DNA sequence within their stem cells. When healthy stem cells are damaged the risk of getting cancer rises. These findings determine that drinking alcohol does in fact, increase the risk of developing seven types of cancer. Professor Ketan Patel the author of the study determined that the damage of DNA in stem cells is the reason some cancers develop. Being that the consumption of alcohol leads to the increased risk of damage to DNA in stem cells, alcohol can increase the risk of cancer.

The study also examines how one's body will try and protect itself from the damages caused by drinking alcohol. The first thing that the body uses to protect itself is a group of enzymes called aldehyde dehydrogenases also known as ALDH. These enzymes will break down acetaldehyde into acetate. Rather than damaging the body acetate is used as a source of energy. The mice in the study, that lacked ALDH and were given alcohol, had four times as much DNA damage compared to the mice with ALDH.

Another line of defense the body has is the ability to use DNA repair systems that work most of the time to reverse the damage caused by the alcohol. However, this process also does not always work, some people have mutations that do not allow their cells to repair themselves. The results of this study conclude that, when a person is not able to process alcohol effectively, they have a higher risk of alcohol-related DNA damage, which can cause certain types of cancer.

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