Causes of alcohol hangover

Fida Khalil

Beloit College. Beloit. Wisconsin

Abstract

A hangover from drinking alcohol is a collection of unpleasant physical and mental symptoms that commonly occur among people who drink to intoxication. One product formed when alcohol is metabolized is acetaldehyde, which is highly reactive and causes damage in high concentrations in the body. A hangover typically starts when the blood alcohol concentration (BAC) starts to decrease, and the unpleasant symptoms of hangovers reach their limit when the BAC is zero. They generally last from 8 to 24 hours. There are different factors, both alcoholic and non-alcoholic, which contribute to the symptoms. Some of the symptoms, such as sweating, rapid pulse, nausea, and vomiting, occur if the concentration of acetaldehyde was high during the process of alcohol metabolism.

Introduction

Veisalgia is the medical term for alcohol hangover. It is originally derived from two words, a Norwegian word “kveis” that means uneasiness that comes after debauchery, and a Greek one “algia” that means pain. A hangover is defined as a collection of unpleasant physical and mental symptoms that commonly occur among people who drink to intoxication (Table 1). Hangovers typically start when the blood alcohol concentration (BAC) starts to decrease. And the unpleasant symptoms of hangovers reach their limit when the BAC is zero. They generally last from 8 to 24 hours. Some studies have found that there are different causes for the various symptoms of hangovers. Some of the symptoms are caused by alcoholic effects and other by nonalcoholic effects (Table 2). One of the main contributors to hangovers is the metabolic processing of alcohol.

Method

Using scientific websites and peer-reviewed articles, I found the most important contributors to getting a hangover as a result of drinking.

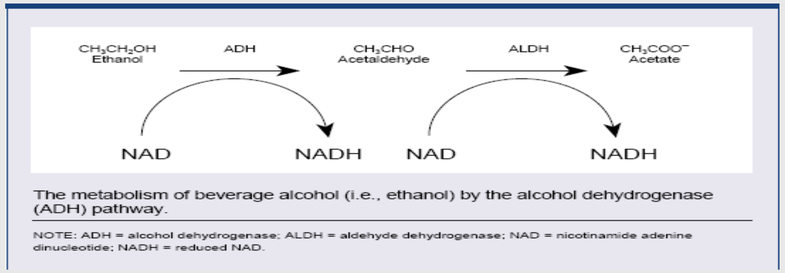

Figure 1: Digestion of alcohol (1)

Table 1 Symptoms of Hangover

Class of Symptoms	Type
Constitutional	Fatigue, weakness, and thirst
Pain	Headache and muscle aches
Gastrointestinal	Nausea, vomiting, and stomach pain
Sleep and biological rhythms	Decreased sleep, decreased REM,[1] and increased slow-wave sleep
Sensory	Vertigo and sensitivity to light and sound
Cognitive	Decreased attention and concentration
Mood	Depression, anxiety, and irritability
Sympathetic hyperactivity	Tremor, sweating, and increased pulse and systolic blood pressure

[1]REM = rapid eye movements.

Table 2 Possible Contributing Factors to Hangover

Direct effects of alcohol
- Dehydration
- Electrolyte imbalance
- Gastrointestinal disturbances
- Low blood sugar
- Sleep and biological rhythm disturbances

Alcohol withdrawal

Alcohol metabolism (i.e., acetaldehyde toxicity)

Nonalcohol effects
- Compounds other than alcohol in beverages, especially methanol
- Use of other drugs, especially nicotine
- Personality type
- Family history for alcoholism

Tables 1 and 2: Symptoms and Factors in Hangovers (1)

Results

Table 1 shows the different types of hangover’s symptoms and the classes to which they belong. Table 2 shows the possible contributing factors to hangovers. Figure 1 shows metabolic processing of alcohol in the body.

Discussion

Many investigators suggest that there are different factors–alcoholic and non alcoholic- contributes to the headache, depression, anxiety, nausea, and other symptoms of hangovers. Alcohol causes dehydration because it increases the production of the urine, and this might cause headache and dry mouth. Vomiting and sweating cause the body to lose more fluid, which might lead to electrolyte imbalance. This might also cause nausea. Another direct effect of alcohol is low blood sugar because it reduces the amount of sugar stored in the liver and produced in the body. This might cause general feeling of weakness, depression, And fatigue. The body can not store the absorbed alcohol, so it metabolizes it in the liver in order to get rid of it. Alcohol metabolism process, which is a main contributor to alcohol hangover, occurs in the liver through two main steps. The first step is breaking down the ethanol to acetaldehyde using alcohol dehydrogenase enzyme (ADH); the second step is to break down the acetaldehyde to acetate using the enzyme acetaldehyde dehydrogenase (ALDH). The acetate then converts to carbon dioxide, water, or fatty acids. Some of alcohol hangover’s symptoms, such as sweating, rapid pulse, nausea, and vomiting, might occur if the concentration of the acetaldehyde was high during metabolism.

References

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