

# Alcohol & Health

## WHAT IS ALCOHOL?

- \* Both water and fat-soluble vitamins can pass into all cells of the body, which is why it's damaging.
- \* 3 Types: Isopropyl, methyl, and ethyl/ethanol.
- \* Ethanol is found in beverages and is essentially poisonous.
- \* Ingested ethanol → acetyl aldehyde → acetate in liver.
- \* Conversion is expensive = no nutritional value.
- \* Eventually converted to ATP.

## ALCOHOL NEGATIVES

- Thickens the brain cortex.
- Increases the risk of cancer (esp. breast cancer) by 4 to 13% even at 10 grams (1 beer, wine).
- Alters gene expression.
- Decreases testosterone.
- Increases estrogen in males.
- One to two drinks/day over a week can lead to neurodegeneration of the cortex and other brain regions.
- Drinking any amount disrupts the gut microbiome because alcohol kills things:
  - Good bacteria are killed.
  - Bad bacteria may leak from the gut (Leaky Gut Syndrome).
- Increases inflammatory cytokines produced in the liver, and the brain is programmed to drink more.

## PREDISPOSITION: GENES & AGE MATTER

- Some people have a natural tendency to seek it for alertness & excitement, and some do not.
- Natural tendency is due to receptor function combined with GABA, Serotonin (calming hormone), and the Hypothalamus-Pituitary-Adrenal Axis (HPA).
- If one starts drinking at a young age, it increases the risk of becoming an alcoholic when older, even if they are not genetically predisposed to it.
- If one waits and takes their first drink at an older age (+21), it decreases the risk of becoming an alcoholic.

## GUT-LIVER-BRAIN AXIS

- All communicate with the brain via 1) neural circuits and 2) chemicals.
- Gray matter = neurons and white matter = axons.
- When one starts drinking, there is suppression of neurons in the prefrontal cortex involved with thinking

and planning.

- That suppression of impulsive behaviors is due to GABA release.
- There is then a decrease in top-down inhibition, which increases proclivity to do irrational things.
- Moderate drinkers may experience changes in neural circuitry to develop top-down inhibitions.
  - When not drinking, cortisol (stress hormone) increases from baseline due to an altered (HPA) Hypothalamus-Pituitary-Adrenal Axis.
  - There is an increased urge to drink more to get back to baseline stress modulation.
  - If moderate drinkers experience a mood decrease, drinking offers a way to strengthen the need for it, but it can be reversed.
- For heavy drinkers, it can cause irreversible damage.

## **ALCOHOL TOLERANCE**

- The aldehyde content (organic compound) is a factor (see types below).
- The more you drink, the pleasure response diminishes.
- People keep drinking to get the diminishing pleasure, so more is consumed. The more consumed, the more the body needs to deal with it.

## **HANGOVERS ARE MULTI-FACETED**

- Only one drink before bedtime can disrupt the sleep cycle.
- Nausea is due in part to a disrupted gut microbiome.
- Headaches are due to vasoconstriction (narrowing) of the blood vessels.
- Alcohol decreases body temperature because it is hypothermic, and it disrupts the central command. Cold therapy MAY help clear alcohol from the system due to cold increasing the hormones adrenaline & dopamine.
- Consuming electrolytes may help when rehydrating the body.
- Severity of the hangover in this order: brandy, rum, red wine, whiskey, beer.