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# Drinking Beer Alters the Composition of Your Red Blood Cells

Analysis by Dr. Joseph Mercola | November 15, 2024

## STORY AT-A-GLANCE

- Drinking beer, whether alcoholic or non-alcoholic, alters the lipid composition of red blood cells, impacting their function and health
- The changes in lipid profiles are mild and subtly influence the fluidity of the cell membranes
- Polyphenols present in beer play a role in lipid metabolism, not the alcohol itself
- The study underscores the importance of diet in maintaining cellular health, particularly through avoidance of alcoholic beverages
- The best way to prevent damage from alcohol is by not drinking it in the first place. However, there are strategies that help minimize its impact in the event you have to drink

**Red blood cells (RBCs) are essential for transporting oxygen from your lungs to every part of your body. Their unique biconcave shape makes them highly flexible, allowing them to navigate through the tiniest capillaries efficiently. This flexibility is crucial for maintaining optimal oxygen delivery and overall bodily function.**

**In addition, the integrity of RBC membranes plays a vital role in their performance. These membranes are composed of various lipids (fats), including cholesterol and phospholipids, which determine the cell's fluidity and flexibility.**

A balanced lipid composition ensures that RBCs remain deformable and effective in their oxygen-transporting role. However, as one study points out, drinking beer eventually causes changes in your blood lipids.

## Moderate Beer Intake Alters Red Blood Cell Lipid Profiles

A recent study[1] discovered that drinking beer, even in moderation, can change the types of fats present in your red blood cells. Researchers found that both alcoholic and non-alcoholic beer lead to an increase in free cholesterol and fatty acids within these cells. Being aware of this shift in lipid composition is essential because it influences your red blood cells health.

The study involved 36 individuals between the ages of 40 and 60 and were also either overweight or mildly obese. Before the study started, all of them had to abstain from alcohol for four weeks. Then, they started drinking for four weeks. Then, another four weeks abstinence was initiated, followed by a second round of four-week drinking. Overall, the test period took 84 days to complete.[2]

Throughout the experiment participants consumed either alcoholic or non-alcoholic beer daily during the drinking period. The researchers analyzed their red blood cells before and after these binges using thin-layer chromatography. They observed that the intake of beer, regardless of its alcohol content, resulted in higher levels of free cholesterol and fatty acids in the red blood cell membranes.[3]

According to the researchers, traditional beer increased the free cholesterol and phosphatidylethanolamine, and decreased phosphatidylcholine. Similarly, non-alcoholic beer also increased free cholesterol and phospholipids (only slightly).[4]

But why does this happen? The key lies in the components of beer itself, whether it contains alcohol or not. It contains polyphenols that interact with the lipids in cell membranes, and the researchers noted that these beer-specific polyphenols increase the fatty acid levels.[5]

## The Implications of Drinking Beer on Your Health

Beer is a beverage enjoyed by many, and its health impacts are often mentioned; there are published studies that paint beer in a positive light. For example, the researchers noted that several observational studies show that moderate alcohol consumption may protect against coronary disease and ischemic stroke. However, these are only observational.

Conversely, the researchers also noted that changes in lipid composition will have implications to your health as well, saying that:[6]

> *"The lipid composition of the cell membrane, particularly cholesterol, influences various functions of embedded enzymes, transporters, and receptors in RBCs. High membrane cholesterol content affects the RBCs' main vital function, $O_2$ and $CO_2$ transport and delivery, with consequences on peripheral tissue physiology and pathology.*
>
> *Additionally, it is well established that cholesterol in the cell membrane not only impairs transport processes but also affects the cell's deformability."*

Maintaining the right balance of lipids in red blood cells is vital for their flexibility and function. The fact that drinking even a moderate amount of beer already subtly modifies your blood's lipid makeup will affect their ability to function properly in the long run. In this context, the cons of drinking beer far outweigh the pros.

## Solutions to Mitigate Changes in Your Blood Lipid Composition

Understanding how beer affects your red blood cells builds awareness on the detrimental effects of alcohol consumption. To support your cellular function and overall well-being, consider the following steps:

1. **Eliminate alcohol consumption —** Cutting out alcohol will significantly improve the lipid composition of your red blood cells. By removing alcohol from your diet, you

reduce its interference with your immune system and decrease the risk of altered cholesterol levels in your red blood cells.

2. **Optimize your lipid profile —** The fat you eat plays a big role in your lipid composition. Replace all sources of linoleic acid with healthier alternatives such as grass fed butter, tallow or ghee. However, consume these in moderation — carbohydrates are still your best source of energy.

3. **Incorporate other antioxidant-rich foods —** Focus on consuming antioxidant-rich foods that create a positive effect on your lipid profile. In a study[7] published in 2021, polyphenols from coffee exhibited healthy changes in the blood lipid composition of participants. Mate tea from Brazil and oranges have also shown positive results.

4. **Regularly monitor your health markers —** Keeping track of your cholesterol levels, particularly HDL and LDL, can help you understand how your red blood cells are functioning. Regular blood tests can provide insights into how dietary changes and alcohol elimination are impacting your lipid profiles.

   Through regular monitoring of your blood markers, you can make necessary adjustments to your lifestyle to support your cellular health and reduce cardiovascular risks.

## Protect Yourself from the Harmful Effects of Alcohol

I don't recommend drinking any alcohol whatsoever. To protect yourself from the damage it creates in your body, not drinking it in the first place is the best approach. However, if you do find yourself in an occasion where you must have a drink, there are some ways to help mitigate the damage.

One tip is taking an N-acetylcysteine (NAC) supplement beforehand. NAC is derived from the amino acid cysteine, which not only boosts glutathione production, but also helps manage acetaldehyde toxicity, which is a primary cause of hangover. To maximize NAC's benefits, take at least a 200-milligram dose about 30 minutes before drinking. It can also be combined with vitamin B1 to enhance the efficacy.

Drinking alcohol also depletes your body of B vitamins, which are necessary to help eliminate alcohol from your body. So, aside from vitamin B1 that I just mentioned, I also recommend taking a full-spectrum B vitamin supplement before and after drinking alcohol. Note, however, that this won't protect you against the effects of excess alcohol consumption, such as alcohol poisoning.

If you're having trouble eliminating alcohol from your life, don't lose hope. Dr. Brooke Scheller, doctor of clinical nutrition and author of "How to Eat to Change How You Drink," offers seven helpful tips below (She has done extensive research on the health effects of alcohol intake):

1. **Get curious and educate yourself —** Read books, listen to podcasts and learn about the health impacts of alcohol.
2. **Find community support —** Scheller runs an online community called the Functional Sobriety Network, which offers a nutrition-based program for alcohol reduction. There are many other support groups and resources available as well.
3. **Examine your social media —** Unfollow accounts that glamorize drinking and follow sober influencers instead.
4. **Address the root causes —** Look at why you drink — stress, social pressure, habits — and find healthier alternatives.
5. **Support your body nutritionally —** Supplements like L-theanine, L-glutamine, NAC, B-complex vitamins and milk thistle can help with cravings and support detoxification.
6. **Stabilize blood sugar —** Increasing protein intake and eating regularly helps reduce alcohol cravings.
7. **Be open about your choice —** Scheller encourages people to simply say they're not drinking for their health if asked.

I encourage you to read my article, "Why Even 'Moderate Drinking Is Harming Your Health," for more valuable insights. There, Scheller shares her journey toward sobriety, which can serve as an inspiration for those looking to remove alcohol from their lives. I also shared how I reevaluated my relationship with alcohol and made the conscious decision to remove it entirely from my life.

## Sources and References


- [1] Nutrients 2024, 16(20), 3541, Abstract
- [2] Nutrients 2024, 16(20), 3541, Experimental Design and Study Population
- [3] Nutrients 2024, 16(20), 3541, Results
- [4, 5, 6] Nutrients 2024, 16(20), 3541, Discussion
- [7] Antioxidants 2021, 10(2), 225, Discussion