Avoiding Relapse: Caffeine, Taurine and CYP Enzymes

August 29, 2017 By Greg Jefferys

This article is the second in a series I am writing about relapsing after treatment for Hepatitis C using DAAs.

Please note that I am not suggesting that you completely give up coffee or tea but just making you aware that HIGH levels of caffeine or taurine may effect treatment outcomes.

Please also remember when reading this that the cure rate using Direct Acting Antiviral medicines to treat Hep C is about 95% so what I write here only refers to that 5% of patients that may relapse. These suggestions might only help one or two people in every hundred, but if one less person in every hundred avoids relapse after treatment then it is a very good thing.

This article focuses on a family of enzymes, CYP enzymes, that the liver produces to metabolize, or degrade, certain chemicals in the body including some of the chemicals used in the new Hepatitis C treatments. Before I get into the chemistry of this I will summarize what I am suggesting for people who are not very interested in the chemistry.

There is a family of enzymes called CYP enzymes that the body uses to break down things such as caffeine, these enzymes also break down drugs such as Sofosbuvir, Velpatasvir (Epclusa), Daclatasvir and the two drugs that make up Zepatier (Elbasvir + Grazoprevir).

This means that if you have high levels of these enzymes in your blood there is a risk that these enzymes will remove enough of the Hep C medication to effectively lead to under-dosing. That is to say they will make the level of active drug in your blood low enough to make treatment ineffective

Caffeine is found in coffee, tea, Coke and all energy drinks such as Red Bull, V, etc. When there is a lot of caffeine in your blood the liver produces these CYP enzymes to get rid of it.

High levels of these CYP enzymes can also be caused by some drugs and herbal supplements, particularly St John’s Wort.

It does not mean that you must give up having a cup or two of tea or coffee each day or the occasional Coke but it does mean that you need to be cautious of how much caffeine you consume during treatment.

One cup of coffee has about 80 mg of caffeine in it, about the same for a can of Coke or Pepsi. A cup of tea has about 30 mg of Caffeine.

Energy drinks have very high levels of caffeine and another stimulant called Taurine. Such energy drinks are to be avoided!

My suggestion is that one or two cups of coffee a day is okay but I would be concerned about more than that.

The Tech Stuff

In Zepatier both elbasvir and grazoprevir are degraded by the liver enzyme CYP3A4. Combination of Zepatier with drugs that induce this enzyme, such as efavirenz, carbamazepine or St. John's wort, is contraindicated because it can lead to ineffectively low plasma levels of elbasvir and grazoprevir, leading to under dosing.

With Epclusa drugs or supplements that are moderate inducers of CYP2B6, CYP2C8, or CYP3A4 (e.g., rifampin, phenytoin, St. John's wort, carbamazepine) may decrease plasma concentrations of Sofosbuvir and/or Velpatasvir, leading to reduced therapeutic effect of Epclusa. The same effect would be seen in Harvoni.

CYP2C8, CYP2C9 and CYP3A4 are all involved in the metabolism of Caffeine and Taurine and high levels of caffeine consumption will lead to high levels of these enzymes in the blood. This in turn may lead to rapid degrading of many of the Direct Acting Antiviral drugs used in modern Hepatitis C treatment.

For these reasons it is important not to use herbal supplements during Hepatitis C treatment and avoid the consumption of excess caffeine and taurine.

I should also add that the relationship between caffeine and taurine and DAA treatment is my own work. The logic for this is as follows:

Both Caffeine and Taurine cause the liver to make CYP enzymes. HIgh levels of CYP enzymes are known to degrade DAAs to the point of making treatment ineffective. High levels of caffeine and/or Taurine create high levels of CYP enzymes. Therefore high levels of caffeine and/or Taurine may present a risk to effective treatment with DAAs.

POST SCRIPT:

Because of the various comments this post has received I will be more clear about what I am suggesting here. There is a lot of evidence that suggests that 2 or 3 cups of coffee per day is actually good for the liver. This post is really aimed at people who drink 10 cups or more of coffee or tea per day or knock over 5 or 6 cans of Red Bull or 10 cans of Coke. Yes there really are plenty of people who drink that much caffeine every day. I am just trying to make people aware of factors that might contribute to relapse. I love coffee and have 2 or 3 cups a day.

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