



# ALCOHOL DEHYDROGENASE

## UNDERSTANDING THE DREADED RED GLOW

*It's something you may have noticed with some of your Asian customers - a couple of sips of alcohol and their faces go bright red. Why?*

**R**ed flush, red blush, or, as the girls like to call it, red glow, is not a sign of drunkenness - so don't mistake it as such and refuse to serve them. It's a sign that the unlucky person has an inactive form of one of the key components required to rid the body of alcohol. You see, only 10-15 per cent of the alcohol consumed is removed by our sweat or breath. The rest is progressively broken down by enzymes within the lining of our stomach and in our liver, then excreted in a manner we're all pretty familiar with.

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of Alcohol and Caffeine, roughly half of all Asians have an inactive form of this enzyme. What's worse is that they tend to have an unusually active form of alcohol dehydrogenase, so they convert alcohol into the toxic aldehyde more rapidly but are unable to get rid of it. In other words, you get less drunk because your body gets rid of alcohol quickly, but suffer worse consequences because your body is slower to get rid of the toxins.

So why have an enzyme to remove alcohol in the first place? After all, alcohol was discovered only a few thousand years ago; it's not an essential part of our diet.

Well, in a way, it is. Remember how alcohol is made in the first place:

with these enzymes, possibly because the ancestors of those without were too drunk to run away from danger and reckoned they could take on sabre-toothed tigers.

It also demonstrates how our natural defence against drunkenness is so easily overwhelmed: physiologically speaking, alcohol is a poison and our bodies are designed to deal with a very small amount at any one time. That's where the old rule-of-thumb to drink one standard drink an hour comes from; you're basically drinking at the rate at which your body can remove the alcohol from your system.

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an aldehyde, and it's the aldehyde that's toxic, causing red flushes, heart palpitations, dizziness and nausea. In Caucasians, it's converted rapidly by an enzyme called aldehyde dehydrogenase, into harmless acetic acid. However, according to Stephen Braun, in *Buzz: the Science and Lore*

glucose molecules are transformed by yeast into alcohol and carbon dioxide. As you will have guessed, we have yeast in our bodies working under similar conditions; they also produce ethanol, so our bodies have evolved to deal with it. In other words, natural selection favours those

So why do half of all Asians have an inactive form of one of the enzymes? It's a genetic mutation that, because it is dominant, is passed from generation to generation. Interestingly, the remainder of the population is made up of slow flushers, who can drink a little

more without suffering the toxic consequences, and no flushers, who, because they have the active alcohol dehydrogenase, can pretty much drink any Westerner under the table.

But it's not all bad news for red flushers. Imagine if you suffered rapid hangover effects from a small amount of alcohol: you would cut back on your drinking, right? According to Stephen Braun, that's exactly what has happened. Alcoholism rates are lower in Japan, China and Korea than in Western countries. None of the alcoholics are fast flushers, and very few of them are slow flushers.

So next time you notice one of your Asian customers with a red flush, consider them lucky to have an early warning system, not only to prevent them from getting drunk, but also to reduce their chances of becoming an alcoholic.

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