

Yerba Mate Inhibits AGE Formation

Yerba Mate Inhibits AGE Formation

Yerba mate inhibits glycation in vitro.

Yerba mate contains caffeic acid, which inhibits glycation.

Advanced Glycation End products (AGEs) are formed in two ways: outside the body and inside the body. The former

happens when sugars are heated with fats or proteins, the latter through metabolism when eating glycation-prone foods such

as fructose.

From an anti-aging point of view, reducing the formation of AGEs is important. One way of doing it is to avoid cooking as

much as possible. However, since the idea of never eating a fried steak is less than appealing to many, including me, I'm

constantly on the lookout for foods and supplements that may help reduce AGEs.

One natural way to inhibit AGE formation is to drink green tea, which has been shown to reduce AGEs both in vivo and in

vitro. However, it seems that there's a better anti-glycation drink available: yerba mate.

Infusions of yerba mate (*Ilex paraguariensis*) are especially popular in South America, but it's becoming increasingly known in

other places as well. I've drank yerba mate on and off for years simply because I like it, but this is the first time I've come

across it's effects on AGEs. I assume that as we learn more about its benefits, it will be even more popular among health-

conscious people. Now, let's look at the study.

Reducing AGE formation: yerba mate vs. green tea

The authors of the paper ([link](#)) compared the AGE-inhibiting effect of yerba mate to that of green tea and aminoguanidine, a

known anti-glycation agent. Water extracts of normal strength were used for green tea and yerba mate (5 g and 10 g leaves /

2 dl water, respectively). Bovine serum albumin and methylglyoxal were used to generate AGEs on proteins in vitro.

As expected, high doses of aminoguanidine reduced both indicators of glycation (tryptophan fluorescence and AGE

fluorescence) by more than 90%. The surprise is that yerba mate dose-dependently and

Yerba Mate Inhibits AGE Formation

significantly reduced AGE

fluorescence, while green tea showed only a non-significant positive trend. At the highest dose (20 mcl/ml), the inhibition from

yerba mate reached 40%.

How and why does yerba mate inhibit AGEs?

Glycation is really a process with several steps, which eventually leads to the formation of AGEs. Aminoguanidine prevents

the first reaction in glycation and thus all its downstream effects from occurring. Yerba mate, on the other hand, works

differently. It inhibits the second phase of glycation: the conversion of Amadori products to AGEs. According to the authors,

this is likely due to the antioxidant and free radical quenching capability of yerba mate.

One possible explanation for yerba mate beating green tea is that yerba mate naturally contains more polyphenols than green

tea. Also, the infusion of yerba mate in the study was stronger than the green tea infusion. A more convincing explanation is

that the bioactive substances between the two are different. While most of the benefits of green tea are due to its catechins,

yerba mate contains caffeic acid, chlorogenic acids, saponins and sapogenins.

Another study ([link](#)) compared the effects caffeic acid, a chlorogenic acid (5-caffeoylquinic acid) and a sapogenin (oleanolic

acid) on AGE formation. Out of the three, caffeic acid was most effective and oleanolic acid was the weakest in inhibiting

glycation. Importantly, caffeic acid and chlorogenic acid inhibited glycation even more effectively than aminoguanidine, with

caffeic acid inhibiting 95% of AGE formation.

How much yerba mate do I need to drink, then?

The important question, of course, is whether drinking yerba mate can really prevent AGEs in the human body. To get some

idea of what the answer might be, let's look at some of the figures.

The yerba mate extract used in the study was not especially strong: 10 grams of leaves per 2 desiliter of water heated to 90

Yerba Mate Inhibits AGE Formation

°C. This makes for a stronger infusion than green tea, but since the taste of yerba mate is not as strong, 10 grams is very

close to how you would normally drink it. The polyphenol content of the infusion was 2.6%.

According to the authors of the first paper, a significant effect was seen in vitro at a concentration of the extract that

corresponds to a 1:100 dilution of the preparations usually drunk, which suggests that a high bioavailability may not be

needed. The authors of the second paper note that the concentrations of oleanolic acid may mimic those found in humans.

So, even though we don't have enough data at this point to make more than educated guesses as to much yerba mate

consumption really helps with reducing AGEs, drinking a few cups of yerba mate with AGE-containing meals may not be such

a bad idea.

Conclusion

Yerba mate reduces glycation in vitro by inhibiting the conversion of Amadori products to AGEs. The most potent substances

found in yerba mate were caffeic acid and chlorogenic acid, which were more effective than aminoguanidine (an anti-

glycation drug) in inhibiting AGE formation. The amount of yerba mate needed to see anti-AGE benefits in humans is unclear,

however, because no studies on humans exist.