

# Inexpensive Natural Sleep Aid Doubles As Anti-Aging Supplement

*Reformatted original text by Dr. Jonathan Wright, Tahoma Clinic*

## ***Sleep well and look younger***

What if there were an anti-aging supplement that could simultaneously improve your quality of sleep and daytime alertness? What if—for reasons including, but not limited to getting better sleep—it would help you to stay in better physical condition with the passage of time? A natural sleep remedy, daytime alertness promoting, anti-aging supplement? While it's true that for many of us, bio-identical hormone replacement can be significantly helpful in all these areas, the subject of this article isn't a hormone, but an amino acid that's been available in natural food stores for decades. And it's inexpensive, too!

Although statistics vary, it's estimated that approximately 30% of American adults suffer with some degree of insomnia. When you look at Americans over the age of 60, that figure shoots up to between 40% and 60%. That means that approximately 70 million Americans over age 18, and 23 to 35 million Americans over the age of 60 are suffering through sleep-deprived nights and drowsy days.

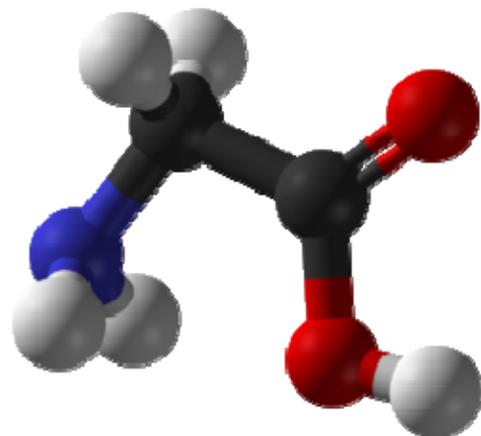
If this natural sleep remedy can help the majority of these millions to start getting a good night's sleep—and preliminary clinical indications are that it might be able to do just that—that's a very significant number. And if the supplement has the “healthy aging” potential for adults that many of us believe it does (more about that later), then its impact could be really—**really**—major!

So why haven't you heard about this powerful amino acid before? Well, the research of its effects on sleep was first published in 2006, really just “a moment ago” in scientific time. And the research on its anti-aging effects is still just an inference, but (as you'll read later), a very reasonable one.

The amino acid is glycine, the smallest of the twenty amino acids commonly found in proteins. Unlike most amino acids, glycine is not “L” (or “R”), but simply “glycine.”

## ***Fall asleep quicker and reach deep sleep faster with the natural sleep aid: Glycine***

In 2007, a study was published that measured the effects of glycine on sleep quality and the common next-day symptoms often caused by lack of sleep. Objective measurement was done with a “polysomnograph” (an electronic instrument very much like an electroencephalogram or “EEG”) which measures brain waves during sleep.



Research volunteers (eight women, three men) were asked to take either 3000 milligrams of glycine or placebo before bedtime. The volunteers who had taken a glycine supplement fell asleep significantly quicker and entered into the “slow wave” sleep commonly called “deep sleep” significantly faster as well. The volunteers reported less daytime sleepiness and they improved their performance on memory recognition tasks.

In a prior randomized, placebo-controlled study, fifteen female volunteers with sleeping problems took either 3000 milligrams (3 grams) of glycine or a placebo before bedtime. The next morning, they completed two standardized questionnaires (for the technically inclined, the “St. Mary’s Hospital Sleep Questionnaire and Space-Aeromedicine Fatigue Checklist”). The volunteers who took glycine had a significant improvement in fatigue, “liveliness and peppiness,” and “clear-headedness.” Although in this study the researchers did not “objectively” evaluate sleep itself, they assumed that with significantly less daytime fatigue, and improvement in the other parameters noted, the study participants who took the glycine must have slept better.

When they took into consideration the objectively measured changes during sleep as well as the subjective changes (improved daytime mental performance), the researchers concluded: “...glycine before bedtime seems to produce subjective and objective improvement of the sleep quality in a different way than traditional hypnotic drugs such as benzodiazepines.”

### ***Unraveling the mystery behind glycine’s abilities***

Research scientists are still trying to figure out exactly how glycine helps with sleep. The amino acid is a very important component (approximately 30%) of collagen, the number one protein in human and animal bodies (more about that in a bit), but it also functions solo as a neurotransmitter in the brain and nervous system, carrying messages between nerve cells. Glycine is predominantly an inhibitory or calming neurotransmitter. This may be how it promotes sleep—yet in some circumstances it can also be an excitatory neurotransmitter.

Another clue to the amino acid’s ability to promote better sleep was revealed through animal research in 2011. Researchers reported that orally administered glycine raises levels of serotonin in the prefrontal cortex (front part) of rats’ brains. This is similar to the action of tryptophan, an essential amino acid that can help some people with sleep. Tryptophan metabolizes into serotonin and niacin (among other things) and can help with sleep, improved mood, and attitude.

In 2012, members of these same research groups published two papers on the use of glycine for sleep. The first focused on sleep quality and reported on some of glycine’s effects on experimental animals—specifically rats—during sleep.

Giving the rats glycine before their rodent rest time resulted in a significant decrease in core body temperature. At the same time there was an increase in blood flow in the skin. The researchers point out that in humans the onset of sleep is already known to coincide with a decrease in core body temperature, which is maintained during sleep in humans.<sup>5</sup>

The second 2012 report focused on daytime performance in partially sleep-deprived individuals. If you’ll recall the 2006 “glycine and daytime performance” research noted above was on individuals who got adequate sleep. The newer 2012 research instead concentrated on volunteers whose sleep was deliberately restricted. Why is this important?

On the websites of the CDC (los federales' Centers for Disease Control and Prevention) or the National Sleep Foundation you'll find that what happens to us when we don't get enough sleep is a major concern. This can include "nodding off" or unintentionally falling asleep during the day, which can lead to poor concentration, a poor memory, difficulty performing job duties, and—tragically—accidents such as car wrecks.

Of course the solution to these problems is getting a good night's sleep. But you and I both know that this can be a lot easier said than done. What if you're up at night with a fussy baby or a sick child? What if you're working two jobs? Unfortunately, there are countless reasons why some of us simply can't get a good night's sleep, no matter how much we desperately want to.

But let's get back to that 2012 deliberately-restricted sleep research. In that study ten male volunteers with no known sleep difficulties were deliberately restricted to three quarters of their usual sleep time for three consecutive nights. Before bedtime every night, each took either 3 grams of glycine, or a placebo. Daytime sleepiness, fatigue, and mental performance were evaluated the next day.

The men who took glycine before bedtime had a significant reduction in fatigue and a tendency towards reduced sleepiness when compared to the placebo group. Computerized testing also showed significantly greater "psychomotor vigilance" a combination of degree of alertness, problem-solving ability, accuracy of responses, and brain-muscle co-ordination in the glycine group.

### ***How a "non-essential" amino acid is essential to healthy aging***

Decades-old research placed glycine very firmly in the "non-essential" amino acid category. Since our own bodies can make glycine from serine (another amino acid), it's always been assumed that our bodies will synthesize as much as is needed, in addition to what we can get from the protein in our diets.

So you may be wondering why supplemental glycine would help anyone sleep or improve daytime alertness if diet and our own bodies provide us with all of the amino acid that we need. A relatively recent research publication reveals the answer in just two sentences. Quoting directly from the abstract of that article: "...the amount of glycine available from synthesis, about 3 grams per day, together with that available from the diet, in the range 1.5–3.0 grams per day, may fall significantly short of the amount needed for all metabolic uses, including collagen synthesis, by about 10 grams per day for a 70 kilogram [154 pound] human. This result supports earlier suggestions in the literature that glycine is a semi-essential amino acid and that it should be taken as a nutritional supplement to guarantee a healthy metabolism."

Remember, glycine is approximately 30% of collagen. (The next-highest percentage of any other amino acid in collagen is 15-16%). Collagen is the most abundant protein (25% to 35%) in our bodies. It's the main component of connective tissue, and is found in large quantities in tendons, ligaments, skin, cartilage, bone, blood vessels, intestines, intervertebral discs, and in the cornea of the eye.

Unlike bone, which has a very low turnover rate, most other high-collagen content tissues are in constant need of renewal and repair. Tendons, ligaments, skin, cartilage, blood vessels,

intestines, intervertebral discs, etc... all are under constant physical stress, in need of repair much more often than more inactive tissues such as bone and brain.

Obviously, keeping collagen in good repair is an important component of healthy aging, and since more glycine goes into collagen than anywhere else, if your body doesn't make enough glycine that simply can't happen.

### ***Doing the math on glycine***

How much glycine might we need for it to function as an anti-aging supplement? We can reveal those numbers—and the weak link in metabolism that makes glycine supplementation so important—by doing a little math (sorry!)

Although amounts vary from person to person, protein is most often stated to be 16% of a human body. If we use 70 kilograms to represent a typical adult (that's what's used in most medical schools) 16% of that is 11.2 kilograms of protein. (Please tolerate the kilograms here, they take us where we need to go, which is grams.)

Next, since 25% to 35% of the over-all protein content of our bodies is collagen we can now figure out that 2.8 to 3.92 kilograms of that 11.2 kilograms is collagen. (Still with me? Hang in there, were in the home stretch now.) We know that glycine is 33% of collagen, so that's 924 grams to 1294 grams (not milligrams) of a single amino acid in a typical adult (less in smaller adults, more in larger adults)!

Now we just learned earlier about the research that revealed the glycine that our body makes, along with what we get through diet, likely falls short of what we need by about 10 grams per day. Ten grams a day is 10,000 milligrams.

This means that three grams (3,000 milligrams) taken at bedtime is still less than one-third of what these researchers say is needed for "all metabolic uses, including collagen synthesis." The math makes it crystal clear that a glycine shortage is not only possible for many of us, but also likely. And if we have a chronic glycine shortage, we also can't possibly repair collagen—our #1 body protein—adequately.

### ***Why our modern diet leaves you glycine deficient***

I know, you're probably thinking, "Good grief! Yet another supplement I have to take? Do I really, really need it?" One of the main reasons we do need it is that in the 21st century we're no longer eating many of the foods that are high in collagen (and therefore glycine) content. Many sources of collagen such as oxtail, joints, and skin are probably not on your shopping list. Neither are chicken gizzards, calf trachea, chitlins (intestine), or tripe (stomach lining). Be honest, how often do you make broth from bones, joints, or skin the way our ancestors did? All of these foods are high in collagen, and therefore high in glycine. And our modern diet is simply lacking in them.

## ***It might be best to avoid glycine if you have cancer***

Using high-tech techniques, a researcher has recently reportedly finding (without corroboration) that glycine may cause certain rapidly-proliferating cancer cells to grow even faster. The faster-growing cancers that were found to consume large quantities of glycine included ovarian, colon, and melanoma. Oddly enough, slower-growing cancers were net releasers of glycine, rather than consumers. Although these findings are relatively new, and more study is needed, it's best to be cautious and not use supplemental glycine if you have cancer unless a physician who has read and understands the glycine and cancer science says it's not a problem for you and your very specific type.

## ***Get your glycine dosage right***

Your glycine goal for better sleep, improved daytime performance, and optimal collagen and tissue repair is ten grams daily. So you may be wondering exactly how much gelatin or collagen hydrolysate is needed to help attain that goal. One half ounce to one ounce equals 14 to 28 grams; using 30% glycine content for "easy math," that's 4.2 to 8.4 grams of glycine along with the other amino acids in collagen. ***Therefore, if you add an additional 3,000 milligrams (3g) at bedtime for sleep problems, you're either close to, or at, your "more healthy aging" goal.***

## ***Glycine is safe. Researchers say: "No adverse effects"***

With the exception of those who very unfortunately have cancer, glycine appears to be very safe. An older research report tells us that thirty-one grams (31,000 milligrams) of supplemental glycine a day had no significant adverse effects.

The research group which reported glycine's effect on sleep asked twelve research volunteers (six men, six women) who had no sleep trouble to take nine grams of glycine each during the day. According to the researchers: "Glycine (9 grams) administered during the day did not induce sleepiness and had no adverse effects."

## ***Is this for real?***

If mainstream physicians and patent medicine companies were asked for an opinion about glycine as an essential amino acid, a non-toxic, non-habituating sleep aid, a daytime performance enhancer, and a natural anti-aging supplement, there might be some partial concession about it being essential, or at least semi-essential. The researchers who made that claim reached their conclusions based upon their own years of research and expertise, as well as an extensive review of the work of others.

I've read many, many scientific reports, and this one appears very solid. Just glycine's collagen repair function and its apparent chronic shortage in humans alone qualifies it a "healthy aging" nutrient and supplement, no matter how that supplementation is done.

Taken alone, the glycine and sleep research might be described as "interesting, but too early to tell." That's because all the data published so far is from one research group, and based on two human studies. Even though the research was double-blind and placebo-controlled, only fifteen research volunteers completed the first study, and even fewer—eleven—were in the second one.

But that's just research alone and leaves out clinical experience, which is just as important. Glycine and sleep was one of the topics at Tahoma Clinic's weekly doctor's meeting. The next week, three Tahoma Clinic physicians reported that they'd slept better from the first night they'd tried it. And then there's me.

My father had an increasing problem with sleep after age 50, and "genetic clockwork" being what it is, so did I. Of course I tried melatonin, which helped for a while. But by last year—despite the use of L-tryptophan, L-theanine, other nutrients, valerian, other botanicals, homeopathy, and just about everything else I could find—very little worked reliably well. It's not that I wasn't sleeping at all; just less than desirable (by me, anyway) and unpredictably. Glycine has changed all that. Sleep for me is rarely a problem anymore.

Everyone over 40 that I've worked with (so far) who's not been sleeping well has reported at least some improvement...and most have noted very significant improvement... with glycine. Even a caller to "Green Medicine," my radio show (see above) phoned in to say that after hearing about glycine and sleep on the program, she tried it, and it worked quite well for her.

So when the available human research (limited as it was, but placebo-controlled and double blind), animal research, and clinical experience so far is all taken into consideration, my conclusion is: GLYCINE HELPS SLEEP! It also helps with daytime alertness, even if circumstances prevented enough sleep. And it's very, very likely a natural anti-aging supplement, too!

### ***Don't swallow patented sleep drugs and drive***

One of the reasons the next-day effect of any sleep aid is so important is the prevention of car wrecks! In 2006, a class action lawsuit was filed against the producers of zolpidem... an ingredient in several popular patented insomnia drugs. People taking the drugs at night were driving, gorging on food, waking up in jail, and other horrible things *while they were asleep*, having no recollection in the morning.

Isn't it nice that there's a simple amino acid that acts as a natural sleep aid to actually improve—rather than impair—next day performance?

*-Dr. Jonathan V. Wright*