MERCOLA MARKET

Promote Your Body's Production of "Master Antioxidant" Glutathione Naturally With NAC to Protect Your Cells and Tissues

Essential for producing what may be your body's most important antioxidant, N-Acetyl-Cysteine, or NAC, has recently been rediscovered for its ability to help protect your liver and cells as well as support healthy insulin secretion, respiratory and immune health, especially when challenged.

AT A GLANCE

- N-Acetyl-Cysteine, or NAC, allows your body to naturally produce glutathione, your body's "master antioxidant," which is essential for optimal immune and metabolic health as well as for your body's proper metabolism of vitamin D3.*
- **NAC with Milk Thistle** provides ongoing support for your body's normal detoxification process and healthy inflammatory response, while also helping your body produce and effectively use antioxidants to help protect against free radical and oxidative damage to your cells and tissues.*
- Our formula combines three powerful ingredients – NAC, Milk Thistle Seed Extract and Organic Broccoli Sprouts Powder – to provide an exceptional array of antioxidants for supporting the healthy function and normal daily repair of

your liver.*

Glutathione has received much attention in recent years for the key role it plays in overall health and well-being.

What is glutathione?

Glutathione is a powerful antioxidant made up of three amino acids – cystine, glycine and glutamate. Known as the "master antioxidant," it's the most abundant antioxidant produced in your body and is found in all of your cells.

One of glutathione's major roles is to keep all your other antioxidants, such as vitamin C and CoQ10, in line and performing at their peak.*

Glutathione's primary task is to help protect your body from free radical damage, wastes and potentially harmful substances. It is one of the most important tools in your body's detoxification arsenal and is crucial for your liver's well-being.*

But that's not all... Your brain, lungs, joints, skin, eyes and every system in your body requires glutathione to function properly.*

It's a "must" for your immune system, as your immune cells work best when they have a delicately balanced level of glutathione. Studies show glutathione promotes T-cell function, and optimal glutathione levels tend to be seen in healthy human subjects.*

As you age, your body's ability to produce glutathione declines. And many substances can hasten its destruction, like alcohol, drugs and environmental contaminants.

When your cells run out of glutathione, they die. When levels run low, cells lose their ability to repair themselves and produce the antioxidants your well-being depends upon.

How Glutathione Affects Your Health and Longevity

Researchers have discovered that your levels of glutathione can determine how well your body responds when you become sick. With low levels of glutathione, you may be more likely to be hospitalized or even die, compared to someone with higher levels.

In fact, longevity researchers now believe glutathione plays a key role in determining your life span.

The level of glutathione in your cells may actually predict how long you will live.

Why? Glutathione helps keep all your other antioxidants functioning at their peak, so lower levels of glutathione can mean a less robust and inferior antioxidant defense overall.

Keep in mind... Your body – especially your liver – depends on antioxidants to help maintain healthy cells and tissues. A lack of antioxidants can lead to oxidative damage from reactive oxygen species (ROS).

Oxidative stress occurs when you have an imbalance between the increased production of ROS and a lack of antioxidant defense to repair oxidative damage to cells, tissues and organs.

Adequate antioxidant defense against ROS damage is crucial for optimal health. Poor antioxidant defense leads to cellular aging and chronic disease.

To look and feel your youthful best, you must have sufficient antioxidant power. Having optimal levels of the "master antioxidant" glutathione is like having insurance, knowing you have enough antioxidants to meet your body's needs.

What's Your Risk for Low Glutathione Levels?

Who's most at risk for having lower levels of glutathione?

We already know older people have lower levels, simply because their body's natural production of glutathione has slowed down. Some men are also more likely to have low levels, as well as smokers and heavy drinkers.

Studies show those who have comorbid conditions, or comorbidities, are also at greater risk of low levels of glutathione. This includes anyone with metabolic and weight concerns, as well as those with blood sugar issues.

Why is this? Glutathione influences the expression of your genes, including those playing a role in glucose metabolism and insulin secretion.

And here's another interesting finding... Glutathione levels appear to be related to vitamin D levels. When your vitamin D blood levels are low, your glutathione is likely to be low, too.

Hundreds of studies show low levels of vitamin D can seriously jeopardize your health, especially your cellular, immune and metabolic health.

And now, it's apparent that glutathione deficiency may cause changes that impair how your body metabolizes vitamin D.

So, if you are taking a vitamin D supplement to help raise your vitamin D level, or are already getting adequate sun exposure (it's very difficult to do in the Northern Hemisphere), you must have enough glutathione for your body to metabolize vitamin D.

However, raising your glutathione levels may not be as easy as it sounds...

The Preferred Way to Raise Your Glutathione Levels

You can raise your glutathione levels using food, supplements and exercise.

Foods and nutrients, like broccoli, green tea, curcumin, rosemary and milk thistle, have a positive impact on glutathione production.

A study with 80 healthy, sedentary adults showed that aerobic training in combination with circuit weight training had the greatest effect on the glutathione antioxidant system.

Certain supplements may help, too. While a glutathione supplement may seem like the obvious best choice, it's not.

Because oral glutathione consists of three amino acids, it is rapidly broken down in your stomach by digestive enzymes. Even if you could assimilate it intact, I don't recommend taking oral glutathione as it may interfere with your body's ability to produce it naturally.

Instead of taking an ineffective glutathione supplement, I recommend providing your body with the raw materials for making its own glutathione. This allows your body to produce only the amount it needs.

One of the best ways to help your body produce glutathione naturally is with N-acetyl cysteine, or NAC, a derivative of cysteine and precursor of glutathione.*

The use of NAC is backed up by *decades* of scientific research demonstrating its valuable role in boosting glutathione levels.

For example, one study showed that supplementing with NAC for 30 days helped restore baseline glutathione concentration in people with low glutathione levels.

Here's how it works...

When your body manufactures glutathione, cysteine is the "rate-limiting amino acid." That means cysteine tends be available in lower amounts than the other two amino acids that make glutathione.

When you take NAC, you increase your cysteine levels, providing your body with more of the raw material it needs to pair up with glycine and glutamine to make glutathione.

8 Additional Ways NAC Supports Health

By replenishing your cellular supply of glutathione on a regular basis, NAC helps your cells regain and maintain their ability to protect themselves against free radicals and ROS damage, especially as you age.*

However, researchers have found that NAC does more than just replenish glutathione within your cells...

NAC is a powerful antioxidant on its own, providing potential benefits in these additional areas:*

1. Supports a normal inflammatory response through its influence on genes involved with your body's inflammatory response*
2. Supports normal healthy insulin sensitivity and metabolic health*
3. Supports respiratory health, especially your lungs and airways*
4. Protects tissues and cells from the effects of oxidative stress from exercise*
5. Supports normal healthy cellular growth and development*
6. Supports healthy mitochondrial function*
7. Provides valuable support for your liver and kidneys*
8. Promotes a positive mood and cognition through its impact on neurotransmitter levels in your brain*

Why Your Liver May Need Extra Support

Years ago, a healthy person's liver did just fine without extra support, but today, we live in a different world. Your liver confronts challenges humans have never faced before.

Your body's largest internal organ, your liver is responsible for removing toxins and harmful substances in your food and living environment, including the water you drink and the air you breathe.

The more contaminated your diet and environment, the harder your liver has to work.

Besides its primary role of protecting your body from harmful substances, your liver plays other key roles, too.

When your liver is healthy, it:

- Produces bile, which helps carry away waste and break down fats.
- Helps regulate the levels of sugar, protein and fat entering your bloodstream.
- Clears your blood of drugs, alcohol and other potentially harmful substances.
- Neutralizes highly reactive oxygen molecules, or free radicals.
- Processes nutrients absorbed by your intestines during digestion.
- Produces cholesterol, proteins and clotting factors to help your blood clot.
- Regulates many of your hormones.

When your liver encounters harmful substances, it breaks them down and sends the byproducts to one of two places – they either enter your blood to be eliminated by your kidneys, or they go into your bile and are passed out through your intestines.

When your liver is healthy, all these functions go on like clockwork, without much support on your part.

But in today's highly-contaminated environment, your liver has to handle an unprecedented load of toxins, which presents many potential threats to its well-being...

Donuts, cupcakes and cookies

Your Expanding Waistline May Be a Sign Your Liver is Under Strain

Stunning new research suggests that your liver may be aging faster than the rest of your body if you hold excess weight in your waist.

Researchers found that for each 10-unit increase in body mass index, or BMI, the physiological age of the liver has grown by 3.3 years.

Let's put that into real numbers with two individuals, one who is normal weight and another who is overweight.

Suppose a 5'8" adult weighs 130 pounds and has a BMI of 20. A second adult of the same height and age weighs 230 pounds and has a BMI of 35.

Even though they are the same age, the liver of the overweight adult is likely five years older than the liver of the normal weight individual.

What if the second individual decided to have surgery to rapidly lose the excess weight?

The age of his liver wouldn't change.

To rejuvenate his liver, he would need to make lifestyle changes to begin the process of revitalizing his liver and protecting it from future threats

You might guess that your liver's worst enemy is alcohol. And while it's true that alcohol is harmful to your liver, there's another substance that's equally as damaging – and far more prevalent. It's in nearly every processed food, often hidden from view.

Causing more damage to your body than any other type of sugar, fructose is particularly hard on your liver. All fructose is shuttled to your liver, where it must be broken down, whereas glucose only needs to be partially broken down before it can be utilized.

Worse, fructose is metabolized directly into fat that stores in your liver, as well as other internal organs and tissues, as body fat, leading to mitochondrial malfunction.

It also produces toxic metabolites and superoxide free radicals when it is metabolized, that can lead to inflammation in your liver.

Your home affects your liver, too. Chemicals, such as phthalates and BPA/BPS, flame-retardants and formaldehyde, found in furniture, floor coverings, building materials, scented personal care products and even grocery store receipts, are toxic to your liver.

Once any of these contaminants enter your body through your skin or lungs – or from food and beverages you consume out of plastic containers – they end up in your bloodstream, where it becomes your liver's job to process and remove them.

7 Simple Ways to Help Support Your Liver

Your liver is responsible for many tasks. From cleaning toxins out of your blood, to building essential proteins that keep your body healthy, to breaking down complex food molecules, your liver is always at work.

There are a number of proactive steps you can take to help protect and support your liver:

1. Attain and maintain your ideal weight.
2. Restrict your intake of fructose from all sources to 15 to 25 grams per day. This means avoiding fruit juices, dried fruits and sweeteners in foods as well as limiting your intake of sugary fruits, like grapes, pears, mangoes and watermelon.
3. Avoid or minimize contact with toxic chemicals, like pesticides, cleansers, paints and solvents.
4. Restrict alcohol consumption, and avoid completely if taking acetaminophen or Tylenol.
5. Minimize or avoid the use of potentially harmful acetaminophen or Tylenol (be sure to check labels, as it's found in many over-the-counter products).
6. Buy products wrapped in paper or packed in glass containers, and avoid the use of plastics, including plastic wrap, as much as possible.
7. Add liver-protective foods to your diet, like fermented vegetables, dark leafy greens and cruciferous vegetables, "clean" sea vegetables, sprouts, artichokes, garlic and onions, avocados, berries, whey protein powder from grass-fed cows, organic pastured eggs and grass-fed meat.

In addition to these daily common sense measures, there's another simple way to help support your healthy liver function.

Powerful Three-Pronged Support for Optimal Liver Function

Making smart lifestyle choices that minimize the toxic load on your liver is the first major step in supporting its healthy function.

The second is providing your liver with the nutrients it needs to help it function efficiently and effectively.

Three exceptional ingredients stand out for their ability to provide powerful support for healthy liver function:*

1. NAC
2. Milk Thistle
3. Organic Broccoli Sprouts

We've combined this "perfect trifecta" of ingredients into **NAC with Milk Thistle** for regular, daily use to specifically target these important functions:

- Help raise and maintain intracellular levels of glutathione*
- Support your healthy immune function*
- Provide on-going support to help reduce the damaging effects of contaminants on your liver*

- Support the normal metabolism of alcohol in your body*
- Provide antioxidant support for your mitochondria and cells*
- Support your body's normal detoxification processes*
- Provide short-term support for occasional acute events*

Each of these three remarkable ingredients offers unique benefits to your liver and overall health. Let's take a closer look at the remaining two ingredients: Milk Thistle and Organic Broccoli Sprouts.

This Ancient Plant Extract Helps Maintain Healthy Glutathione Levels and More

Milk thistle has been treasured for over 2,000 years for its value in supporting liver, kidney and gall bladder health.*

The ancient Greek physician, Dioscorides (40-90 A.D.), recommended milk thistle to support good health. So did Hildegard von Bingen, the renowned 12th Century German nun and herbalist.

When the leaves of the milk thistle plant are crushed, they release a milky sap – hence, the name.

Milk thistle is an excellent source of the antioxidant compound silymarin, its primary active component. Silymarin helps protect your liver and promotes healthy liver function by:

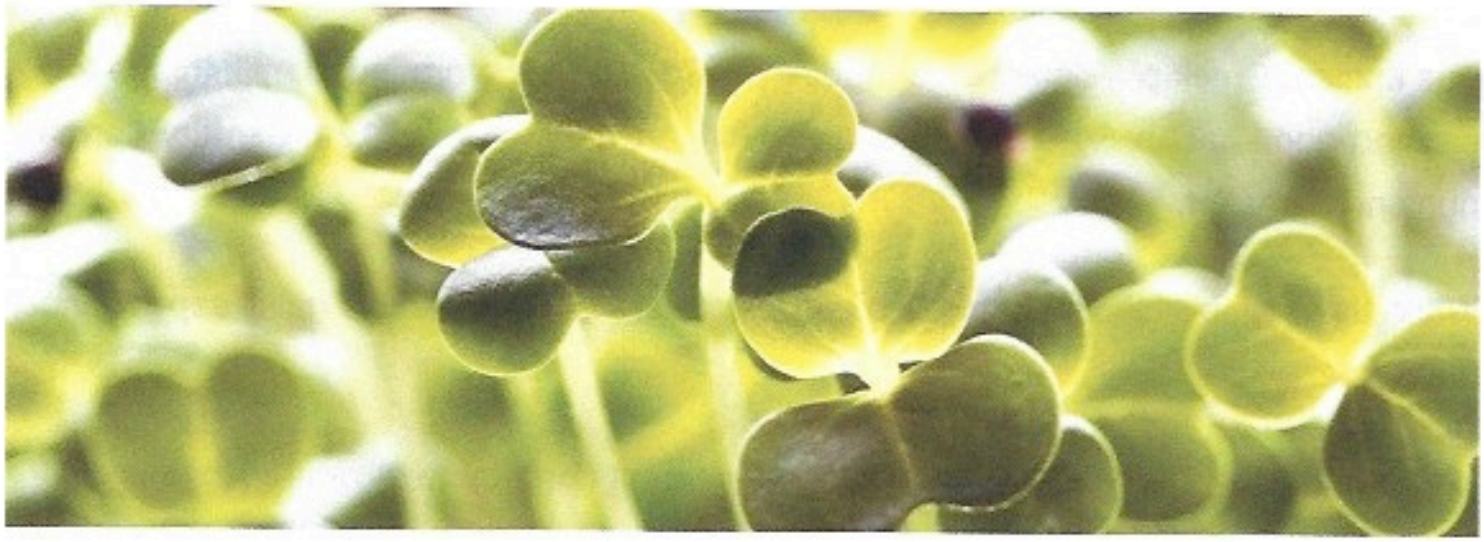
- Promoting a healthy, normal inflammatory response in your cells through its effect on gene expression.*
- Increasing glutathione and helping to prevent its depletion in your liver.*

- Minimizing liver injury from environmental toxins, drugs and alcohol.*
- Activating AMPK (activated AMP-activated protein kinase), the "metabolic master switch" inside your cells that helps regulate metabolism and energy homeostasis.*
- Inhibiting the overactivation of the mammalian target of rapamycin (mTOR) pathway to promote healthy cells and tissues.*

Extracted from the seeds of the milk thistle plant, silymarin consists of three flavonoids – silibinin, silidianin and silicristin – all of which may help repair liver cells that have been damaged by environmental pollutants, alcohol and fructose.*

Together, milk thistle and NAC combine modern and ancient wisdom to provide powerful support for your liver and overall health.

To these two ingredients, we added one more liver-supporting powerhouse...



How This Phytochemical Helps Protect Your Liver from Stress and Strain

Glucoraphanin is a precursor to sulforaphane, a potent liver-supporting phytochemical found in regular organic broccoli – its best-known source. Phytochemicals are bioactive nutrient chemicals produced by plants.

While mature broccoli contains the most glucoraphanin of any vegetable, fresh, young broccoli sprouts – grown from organic broccoli seeds – can contain *up to 100 times* the amount of glucoraphanin in mature broccoli.

When animals in studies chewed or swallowed vegetables containing glucoraphanin, the resulting sulforaphane fired up the body's waste disposal system.

This not only helped the body rid itself of pollutants but also helped protect the body from potential harm.*

Researchers wanted to see how these substances would work in humans, so they travelled to one of the most heavily industrialized and polluted regions in China to put their theory to the test...

Recruiting a total of 291 men and women living in a rural farming community in Jiangsu Province, China, about 50 miles north of Shanghai, they initiated their 12-week trial.

The treatment group received a half-cup of a beverage made with broccoli sprout powder containing glucoraphanin and sulforaphane, combined with sterilized water, pineapple and lime juice.

Urine and blood samples were taken during the trial to measure inhaled air pollutants.

The results were astounding...

Excretion of a common and potentially hazardous airborne pollutant increased the very first day in the broccoli sprout powder group – by a whopping 61%. Increased excretion continued during the entire 12-week period.

The study subjects who consumed the broccoli sprout powder were able to get rid of far more of the pollutants in their bodies than the subjects who didn't consume the powder.

Researchers concluded that the sulforaphane in the sprout powder might in some way be signaling to the cells the need to adapt to and survive a broad range of environmental contaminants, including those in water and food.

This study, along with many others, demonstrates the value of organic broccoli sprout powder for supporting your liver's big job of detoxification.

Combined with the two other ingredients in **NAC with Milk Thistle**, it creates a powerful trifecta of liver support.

Trifecta Formula Provides Unique, Powerful Support for Glutathione Production and Liver Health*

Your liver is continually hard at work protecting your body from the effects of environmental pollutants, chemicals and toxins of every kind. At the same time, it must break down the food you eat to utilize the nutrients inside – all for optimum health.

In our modern world, with its chemical and airborne pollutants and harsh food processing methods, your liver has to work harder than ever before in human history.

And it's become more important than ever to optimize your body's production of glutathione to help you live a long, healthy life.*

Now, you can accomplish both with **NAC with Milk Thistle**. With this unique "trifecta" formula, you get:

- **NAC**, for its ability to restore glutathione supplies in your cells and support

mitochondrial, immune and respiratory function.*

- **Milk Thistle Extract**, for the benefits of silymarin to help repair damaged liver cells and increase glutathione levels.*
- **Organic Broccoli Sprout Powder**, with its rich supply of glucoraphanin for sulforaphane production to support your body's rapid excretion of environmental pollutants.*

Ideal for daily use, **NAC with Milk Thistle** provides the perfect tool to help maximize your levels of glutathione and minimize the damaging effects of everyday pollutants and stresses on your liver.

When it comes to a hard-working organ like your liver, you want to provide it with all the help it can get. Take control of your liver health, and order **NAC with Milk Thistle** today.

FAQ

1. Can I take NAC with Milk Thistle continuously or is it designed for short-term use only?

We've designed **NAC with Milk Thistle** for regular use to help maximize your body's natural production of glutathione and minimize the effects of contaminants and stresses on your liver on a daily basis.* There are no reported side effects with the levels of nutrients in this formula.

You can also use a short-term higher dosage of **NAC with Milk Thistle** for acute events. You can take up to six capsules a day for up to a week. After one week, reduce your dosage back down to the recommended two capsules daily.

2. Can I take NAC with Milk Thistle when I drink alcohol?

NAC with Milk Thistle can be taken before, during and after consuming alcohol. It helps maintain your body's normal metabolism of alcohol.

3. Should I take NAC with Milk Thistle with or without food?

We recommend taking two (2) capsules per day with a meal.

4. What's your source for NAC?

We source our NAC from duck feathers which, surprisingly, are the best natural source of N-acetyl cysteine. Incidentally, these are not the same ducks as those used to produce the French delicacy, foie gras.

5. Are there any allergy concerns for the NAC?

There are no allergy concerns, as there are no proteins in NAC.