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## What the Research Really Says About Apple Cider Vinegar

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### By Dr. Mercola

First of all, please recognize that this document is NOT intended to be a comprehensive or exhaustive analysis of apple cider vinegar. However, you can help add to the current understanding of this topic by adding your own comments at the bottom of this page.

There have been many lofty claims about the miraculous healing powers of apple cider vinegar, and many people do seem to be experiencing some health benefits. However, much of what you read about this product on the Internet is overstated, or simply unfounded.

Some proponents of apple cider vinegar claim it can cure everything from diabetes to acid reflux, to warts, cancer, arthritis, athlete's foot, halitosis, high cholesterol, gout, poison oak, urinary tract infections, and even head lice!

Oh -- and yes, it can help you with your Easter egg dying as well.

With the surging interest in alternative medicine, you can now even get apple cider vinegar in pill form.

Dramatic claims aside, let's examine what is really known about vinegar, based on the scientific studies to date.

## Latest Research Findings on Vinegar and Diabetes

There has been surprisingly little research about using vinegar for therapeutic health purposes, given the large number of dramatic claims about it. However, lack of scientific studies is a common problem for many natural and alternative therapies.

Perhaps the most researched and the most promising of apple cider vinegar's benefits are in the area of type 2 diabetes. Several studies have found that vinegar may help lower blood glucose levels.

In 2004, a study cited in the American Diabetes Foundation's publication *Diabetes Care*<sup>1</sup> found that taking vinegar before meals significantly increased insulin sensitivity and dramatically reduced the insulin and glucose spikes that occur after meals. The study involved 29 people, divided into three groups:

1. One-third had been diagnosed with type 2 diabetes.
2. One-third had pre-diabetic signs.
3. One-third was healthy.

The results were quite significant:

- All three groups had better blood glucose readings with the vinegar than with the placebo.

- People with pre-diabetic symptoms *benefited the most* from the vinegar, cutting their blood glucose concentrations by nearly half.
- People with diabetes improved their blood glucose levels by 25 percent with vinegar.
- People with pre-diabetic symptoms had lower blood glucose than the healthy participants after both drank vinegar.

A follow-up study geared at testing vinegar's long-term effects yielded an unexpected but pleasant side effect: moderate weight loss. In this study, participants taking two tablespoons of vinegar prior to two meals per day lost an average of two pounds over the four-week period, and some lost up to four pounds.

In 2007, another study cited by WebMD<sup>2</sup> involving 11 people with type 2 diabetes found taking two tablespoons of apple cider vinegar before bed lowered glucose levels in the morning by 4 to 6 percent.

Although the research to date looks favorable, more studies are needed to confirm the extent of vinegar's insulin stabilization benefits.

## Vinegar and Blood Pressure

There is far less research exploring vinegar and heart health.

In 2006, one study showed that vinegar could lower cholesterol in laboratory rats<sup>3</sup>. Another study on rats<sup>4</sup> found their blood pressure could be lowered by the acetic acid in vinegar.

However, these results do not *necessarily* apply to people; therefore, we really need some research on humans before conclusions can be drawn.

## Possible Cancer Combatant

There is some positive preliminary research suggesting apple cider vinegar can help prevent cancer. A few laboratory studies have found that vinegar may be able to kill cancer cells or slow their growth<sup>5</sup>. However, epidemiological studies of people have yielded confusing results.

One study found that taking vinegar was associated with a decreased risk of esophageal cancer. Another associated it with an *increased risk* for bladder cancer. Clearly, the jury is still out on cancer prevention.

## An Apple a Day

Those who tout apple cider vinegar's wide-ranging benefits say its healing power comes from the abundance of nutrients that remain, even after the apples are fermented (Have you ever wondered what apples are good for?). They contend that vinegar is rich in minerals, vitamins (including potassium, calcium, and beta-carotene), complex carbohydrates and fiber, pectin, amino acids, and beneficial enzymes.

The problem is, when standard nutritional analyses of apple cider vinegar are done, it is found to be a poor source of most of these nutrients<sup>6</sup>. For example, the one milligram of calcium found in a tablespoon of apple cider vinegar does not come close to the 1,000 milligrams a typical adult needs each day.

It has been claimed that soluble fiber in the vinegar, in the form of pectin, binds to cholesterol and helps carry it out of your body, thereby improving your lipid profile. However, apple cider vinegar contains no measurable pectin or any other fiber, for that matter.

Perhaps apple cider's magic may come from the vitamins it contains?

Wrong again.

According to the USDA, apple cider vinegar has no measurable vitamin A, vitamin B6, vitamin C, vitamin E, thiamin, riboflavin, niacin, pantothenic acid, beta-carotene, or folate -- and it's equally lacking in amino acids, lycopene, or any other nutritional elements.

Then, is this stuff just good for cleaning windows and dying eggs?

Hardly.

Even though it is devoid of many of the traditionally valued nutrients, evidence of apple cider vinegar's health benefits has been witnessed for hundreds -- maybe thousands -- of years<sup>7</sup>.

So, what can explain this mysteriously beneficial elixir?

It could be partially related to the fact that vinegar is a diluted acid, specifically acetic acid, which is responsible for its sour taste and pungent smell. The pH changes it induces may contribute to some of its actions.

Some of the dramatic benefits may also be derived from yet-to-be-identified phytochemicals (beneficial compounds in plants) that scientists are now discovering in a number of different foods. In fact, many of your strongest weapons against cancer are the phytochemicals found in fruits and vegetables.

One thing that apple cider vinegar is high in is acetic acid. Like other acids, acetic acid can increase your body's absorption of important minerals from the foods you eat. Therefore, it is possible that drinking a mild tonic of vinegar and water just before meals might improve your body's ability to absorb the essential minerals locked in foods. Apple cider vinegar might help you get more out of your leafy greens!

How can apple cider vinegar help regulate your insulin?

One theory is that it might inactivate some of the digestive enzymes that break down carbohydrates into sugar, thus slowing absorption of sugar from a meal into your bloodstream. This gives your body more time to pull sugar out of your blood, preventing your sugar levels from spiking.

## The Gnarlier, the Better

When purchasing an apple cider vinegar, you'll want to avoid the perfectly clear, "sparkling clean" varieties you commonly see on grocery store shelves. Instead, you want *organic, unfiltered, unprocessed* apple cider vinegar, which is murky and brown.

When you try to look through it, you will notice a cobweb-like substance floating in it. This is known as "mother,"<sup>8</sup> and it indicates your vinegar is of good quality.

The reason manufacturers distill vinegar is to remove this rather murky looking stuff that most folks won't buy. But in this case, it's the murky looking stuff you want. As with everything else, the more processed a food is, the less nutritious, and this holds true for apple cider vinegar.

The first vinegar was the result of an ancient accident.

Long ago, someone stored a keg of wine too long (presumably a poorly sealed one that allowed oxygen in). When the eager drinkers opened it, they found a sour liquid instead of wine. The name "vinegar" comes from the French words for "sour wine."

## How Should Apple Cider Vinegar Be Used?

There are no official guidelines about taking vinegar internally. Some people take one to two teaspoons a day, mixed in a glass of water or juice, before meals or in the morning, and report benefits from doing so. The risk of taking small amounts of apple cider vinegar seems low.

Apple cider vinegar makes a delightful salad dressing. You can even make a vinegar-based coleslaw, rather than the usual creamy mayonnaise-based one. It is good on fish as well and serves as a great tenderizing marinade for meat, giving it a bit of zing. And it's tasty drizzled over cooked greens.

If you are considering taking it medicinally, there are some things to keep in mind<sup>9</sup>:

- Apple cider vinegar is highly acidic. The main ingredient is acetic acid, which is quite harsh. You should always dilute it with water or juice before swallowing. Pure, straight apple cider vinegar could damage your tooth enamel or the tissues of your mouth and throat. (There is, in fact, one reported incident of long-term esophageal damage to a woman who got an apple cider vinegar supplement capsule stuck in her

throat.)

- Long-term excessive use could conceivably cause low potassium levels and lower bone density.
- Apple cider vinegar could theoretically interact with diuretics, laxatives, and medicines for diabetes and heart disease.

If you are under the care of a physician and you want to try a course of apple cider vinegar, talk to your doctor first to make sure it won't interfere with any of the medications you are presently on.

## Apple Cider Vinegar -- It's Not Just a Breakfast Drink

Vinegar is one of the best natural agents for removing certain pesticides and bacteria from your fresh produce. Of course, you don't need apple cider vinegar for this -- any basic white vinegar will do, and for a fraction of the price.

Gayle Povis Alleman, MS, RD<sup>10</sup> recommends a solution of 10 percent vinegar to 90 percent water as a bath to briefly soak produce. Just place your veggies or fruit in the solution, swish it around, and rinse thoroughly.

Don't use this process on fragile fruits (like berries), since they could be damaged in the process or soak up too much vinegar through their porous skins.

- Apple cider vinegar has long been used as a natural hair care product. Its acidity is close to that of human hair. It's a good conditioner and cleaning agent, as well as an effective germ killer. You can visit <http://www.apple-cider-vinegar-benefits.com> for information on how to make a vinegar hair rinse.
- Vinegar also has some applications for pets, including cleaning ears, relief of certain skin problems, and combating fleas and ticks<sup>11</sup>
- Some horse owners claim apple cider vinegar is an excellent natural horse fly spray and horse hoof care product.
- Vinegar is a great, all-around cleaning agent for everything from countertops to windows.

Obviously, we need a great deal more research to investigate vinegar's full healing potential. While it is not likely an all-encompassing miracle cure, it can certainly be useful in a variety of ways, for a variety of conditions. It's one more multi-purpose tool to have in your natural pantry.

And if you are really ambitious and adventuresome, you might want to try your hand at making apple cider vinegar from scratch. Detailed instructions can be found at <http://www.apple-cider-vinegar-benefits.com>.

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