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The Broad-Spectrum Antiviral Effects of Willow Bark Extract

Analysis by Dr. Joseph Mercola | December 26, 2023

STORY AT-A-GLANCE

- Willow bark is perhaps most widely known as aspirin's forerunner, but it appears to have powerful antiviral effects as well
- Willow bark extract has broad-spectrum, antiviral effects against coronaviruses and enteroviruses
- Willow bark is effective against both enveloped and nonenveloped viruses, causing the viruses to cluster together rather than spread apart
- In a study, willow bark broke down the enveloped coronaviruses, while the nonenveloped enteroviruses were "locked down," meaning their genome wasn't released and they couldn't reproduce
- Willow bark extract is often used as a remedy for pain and inflammation, including that related to low back pain, osteoarthritis, tendinitis, bursitis and headaches

Willow bark is perhaps most widely known as aspirin's forerunner, but it appears to have powerful antiviral effects[1] as well. Willow bark contains salicylates, including salicylic acid — the acetylated form of which is now the active ingredient in aspirin — and its derivative salicin. But willow bark deserves accolades even apart from this contribution.

Used for medicinal purposes for more than 3,500 years,[2] willow bark was revered in ancient Egypt, South America, Greece and China. Hippocrates used willow bark for pain and inflammation in the 4th century B.C., while the ancient Egyptians relied on willow bark as a painkiller and antipyretic, or fever reducer.

1763 marked the year the first clinical study involving willow bark was performed, which confirmed its effectiveness as an antipyretic. To this day, much of the research surrounding this natural compound centers on its anti-inflammatory and pain-relieving effects, but willow bark's antiviral effects are receiving increasing attention.

Willow Bark Extract Inhibits Viruses

Researchers in Finland set out to investigate the antiviral properties of willow (Salix spp.) bark extract against coronaviruses and enteroviruses. Broad-spectrum antiviral effects were noted, with the team revealing willow bark is effective against both enveloped and non-enveloped viruses. Further, it stopped the viruses in different ways.

When viewing viruses treated with willow bark extract under a microscope, the viruses clustered together rather than spreading apart. Willow bark then worked to break down the enveloped coronaviruses, while the non-enveloped enteroviruses were "locked down," meaning their genome wasn't released and they couldn't reproduce.[3]

Speaking with Phys.org, study author Varpu Marjomäki with the University of Jyväskylä explained, "The extracts acted through distinct mechanisms against different viruses. But the extracts were equally effective in inhibiting the enveloped as well as nonenveloped viruses."[4]

Interestingly, when several commercial reference compounds, including salicin and salicylic acid, were tested against OC43, a strain of coronavirus responsible for 15% to 30% of mild upper respiratory tract infections in humans, and CVA9, a strain of coxsackievirus, none was effective, which means willow bark compounds may act synergistically. According to the study:[5]

> *"This suggests that any of the commercial reference compounds do not individually contain high enough antiviral activity. This became more evident after fractionation of the bark extract when we observed that all fractions except fraction number 1 contained very high virucidal activities.*

Those active fractions contained various interesting chemical groups, of which many are known to contain biological activities. The bioactive properties of these bark extracts and broad-spectrum antiviral activity are thus likely to be due to the synergistic effects of the different detected flavonoids, hydroxycinnamic acid derivatives, and procyanidins."

What Else Is Willow Bark Good For?

Willow bark extract is often used as a remedy for pain and inflammation, including that related to low back pain, osteoarthritis, tendinitis, bursitis and headaches. One meta-analysis of randomized controlled trials found willow bark was more effective than placebo in relieving pain and improving physical status in people with arthritis. The willow bark was also safe, as no differences in adverse events were found.[6]

White willow bark (Salix alba) may also work better than placebo for short-term pain relief in people with low back pain.[7] Further, willow bark at a daily dose of 240 milligrams reduced pain as well as a daily dose of the now-banned nonsteroidal anti-inflammatory drug (NSAID) Vioxx.[8]

Willow bark is also known to down regulate inflammatory factors, is useful for sports performance, and often is added to weight loss products.[9] Material derived from willow bark also has antibacterial and antibiofilm properties, making it potentially useful for treatment of infected chronic wounds.[10]

"Traditional folklore claims that willow bark provides a major defense against surrounding pathogens," researchers wrote in the Journal of Agricultural and Food Chemistry.[11] Indeed, lignin, a major component in willow bark, is effective against multiple food-borne and pathogenic microorganisms. Again, willow bark appears to relieve pain and inflammation via multiple mechanisms that work together to offer health benefits. As noted in Phytotherapy Research:[12]

"Although willow bark extracts are generally standardized to salicin, other ingredients in the extracts including other salicylates as well as polyphenols,

and flavonoids may also play prominent roles in the therapeutic actions. Adverse effects appear to be minimal as compared to non-steroidal anti-inflammatory drugs including aspirin."

Could Aspirin Fight COVID?

Aspirin is derived from willow bark compounds, so it stands to reason that it, too, may offer benefits against infection. According to Thrombosis Research:[13]

"The therapy of rheumatism began thousands of years ago with the use of decoctions or extracts of herbs or plants such as willow bark or leaves, most of which turned out to contain salicylates. Following the advent of synthetic salicylate, Felix Hoffman, working at the Bayer company in Germany, made the acetylated form of salicylic acid in 1897. This drug was named "Aspirin" and became the most widely used medicine of all time."

Aspirin is a staple medicine that is frequently recommended as a remedy to control inflammation and prevent blood clots. There's also evidence it could have helped limit the **COVID-19 pandemic death toll**, had it not been downplayed and ignored.

According to research published in April 2021, aspirin reduced COVID-19 patients' need for mechanical ventilation by 44%, ICU admission by 43% and mortality by 47%.[14] Based on this research, it appears COVID-19-related hospital deaths could have been cut nearly in half had aspirin been routinely used. Study author Dr. Jonathan Chow commented on the results, stating:[15]

"The results of the study do not really surprise us because we know that COVID causes excess clot formation and we know that aspirin is a very potent blood thinner. So, when you have a disease that causes clots and a medication that thins your blood, that may lead to the protective effects that we found."

A narrative review published in Biomedicines also suggested:[16]

"… [A] strong pathophysiological rationale for a potential therapeutic role for ASA [acetylsalicylic acid (aspirin)] in COVID-19 has been advocated because of its anti-inflammatory, antiplatelet aggregation and anticoagulant effects, as well as its modulation of the immune system and possible inhibition of viral replication and/or entry."

Aspirin Has Demonstrated Anti-Infective Properties

Aspirin's anti-infective properties are also being explored.[17] It turns out aspirin has properties that influence the immune response along with offering anti-infective and antibiofilm activity. The compound may be useful against bacteria, viruses, fungi and parasites, targeting conditions such as:[18]

Sars-CoV-2	Viral hepatitis
Viral infections	HIV
Tuberculosis	Leprosy
Mycobacteria	Pneumonia
Liver abscess	Gastroenteritis
Endocarditis	Endotoxins
Sepsis	Prosthetic joint infections

Aspirin even has potential as an anticancer agent, with daily use associated with a reduced risk of colorectal cancer.[19] Interestingly, aspirin also lowers biomarkers of inflammation as well as increases autophagy, similar to fasting, according to a study in mice.[20]

The study showed that aspirin, or its active metabolite salicylate, caused autophagy by inhibiting the acetyltransferase activity of EP300, which is a specific gene, also known

as p300, that codes for proteins that regulate the activity of many genes in tissues throughout your body. It plays an essential role in controlling cell growth and division, prompting cells to mature and take on specialized functions.

Was Aspirin the Target of a Discrediting Campaign?

While I cannot prove it, I suspect aspirin has been (and still is) the target of a discrediting campaign because it competes with newer, far more expensive blood thinners and pain relievers.

For decades, a daily regimen of low-dose so-called "baby aspirin" (81 milligrams), was recommended to prevent and treat heart attack, stroke and angina (chest pain) in those 50 and older. Pharma started attacking aspirin in the 1970s when NSAIDs were introduced as patented far more expensive, but not more effective, alternatives.

The discrediting campaign increased in 2014, when the U.S. Food and Drug Administration started warning against the use of aspirin as a primary preventive for these conditions in those with no history of cardiovascular disease, due to potential side effects and the lack of data to support its use.[21]

In late 2021, the United States Preventive Services Task Force (USPSTF), a physician group that issues guidance for medical best practices, also updated its guidance to formally discourage people 60 and older from using an aspirin regimen to prevent a first heart attack or stroke.[22]

Once NSAIDs hit the market in the 1970s, aspirin needed to be downplayed to justify these expensive patented drugs. That's still the case today. It's also competing against pricey anticoagulants such as Xarelto (rivaroxaban) and Eliquis (apixaban).

The average retail price for a monthly supply of Eliquis or Xarelto is around $550. A month's supply of generic heparin is about $30, and warfarin (another generic) is around $19.[23] Meanwhile, you can pick up a bottle of 300 baby aspirins, a 10-month supply, for less than $15. That's a monthly cost of $1.50.[24]

Should You Take Aspirin or Willow Bark?

I'm convinced of the prophylactic value of aspirin, and I take 325 mg per day. I find its prometabolic, antilipolytic, anti-inflammatory, anticortisol and anti-estrogen effects very appealing, and its safety is well-established.

Aspirin also plays a role in mitochondria function[25] and also has other health benefits. Importantly, it helps increase the oxidation of glucose as fuel for your body while inhibiting the oxidation of fatty acids, specifically linoleic acid.

The variety I use is not a tablet but, rather, is 99% pure USP aspirin. if you do decide to use aspirin, be sure to avoid coated extended-release varieties due to the additives they contain. Immediate-release aspirin is the preferred version.

If you are sensitive to aspirin, it would be best to use a salicylic acid or willow bark supplement. When you consume aspirin, the acetylsalicylic acid is metabolized in your body into salicylic acid, which is the compound responsible for the anti-inflammatory, pain-relieving and antithrombotic effects of aspirin. This can be found in willow bark.

Look for a clean, high-quality willow bark supplement. Further, since the research suggests that some of willow bark's healing properties are due to synergistic effects, it's possible it may offer benefits above and beyond salicylic acid.

Sources and References

- [1, 5] Front. Microbiol., 08 November 2023, Sec. Virology
- [2, 6] Life (Basel). 2023 Oct; 13(10): 2058
- [3, 4] Phys.org November 8, 2023
- [7, 8] Cochrane Database Syst Rev. 2014 Dec; 2014(12): CD004504
- [9, 12] Phytother Res. 2015 Aug;29(8):1112-6. doi: 10.1002/ptr.5377. Epub 2015 May 22
- [10, 11] J. Agric. Food Chem. 2023, 71, 44, 16554–16567
- [13] Thromb Res. 2003 Jun 15;110(5-6):255-8. doi: 10.1016/s0049-3848(03)00379-7
- [14] Anesthesia & Analgesia April 2021; 132(4): 930-941
- [15] General Surgery News August 4, 2021
- [16, 17] Biomedicines. 2022 Feb; 10(2): 263
- [18] Biomedicines. 2022 Feb; 10(2): 263., Figure 1
- [19] Nat Rev Clin Oncol. 2012 Apr 3;9(5):259-67. doi: 10.1038/nrclinonc.2011.199

- [20] Cell Rep. 2018 Feb 27; 22(9): 2395-240
- [21] American College of Cardiology May 5, 2014
- [22] AAFP October 21, 2021
- [23] Talk to Mira, Cost of Blood Thinners in 2021
- [24] Walmart Aspirin Prices
- [25] Biochem Biophys Res Commun. 2017 Jan 8; 482(2): 346–351