

From VOA Learning English, this is **Science in the News**. I'm Mario Ritter. And I'm Avi Arditti. Today, we tell the story of aspirin.

People have known since ancient times that aspirin helps to reduce pain and high body temperature. But that is not all aspirin can do. It has gained important new uses in recent years. Small amounts of the drug may help prevent a heart attack or stroke. One study showed that some people who took two aspirin pills a day had lower rates of colorectal cancer. And researchers say aspirin may help patients with colon cancer live longer.

But others say the acid in aspirin can cause bleeding in the stomach and intestines. And studies showed that aspirin or other pain medicines may lead to loss of eyesight and hearing.

So, how did aspirin become so important? The story begins with a willow tree. Two thousand years ago, the Greek doctor Hippocrates advised his patients to chew on the bark and leaves of the willow. The tree contains the chemical salicin. In the 1800s, researchers discovered how to make salicylic acid from salicin.

In 1897, a chemist named Felix Hoffmann at Friedrich Bayer and Company in Germany created acetyl salicylic acid. Later, it became the active substance in a medicine that Bayer called aspirin.

In 1982, a British scientist shared the Nobel Prize in Medicine in part for discovering how aspirin works. Sir John Vane found that aspirin blocks the body from making natural substances called prostaglandins.

Prostaglandins have several effects on the body. Some cause pain and the expansion, or swelling, of damaged tissue. Others protect the lining of the stomach and small intestine.

Prostaglandins make the heart, kidneys and blood vessels work well. But there is a problem. Aspirin works against *all* prostaglandins, good *and* bad.

Scientists have also learned how aspirin interferes with an enzyme. One form of this enzyme makes the prostaglandin that causes pain and swelling. Another form creates a protective effect. So aspirin can reduce pain and swelling in damaged tissues. But it can also harm the inside of the stomach and small intestine. And sometimes it can cause bleeding.

Many people take aspirin to reduce the risk of a heart attack or stroke from blood clots. Clots can block the flow of blood to the heart or brain and cause a heart attack or stroke. Scientists say aspirin prevents blood cells called platelets from sticking together to form clots.

A California doctor named Lawrence Craven first reported this effect in the 1950s. He observed unusual bleeding in children who chewed on an aspirin product to ease the pain after a common operation.

Doctor Craven believed the bleeding took place because aspirin prevented blood from thickening. He thought this effect might help prevent heart attacks caused by blood clots. He examined the medical records of 8,000 aspirin users and found no heart attacks in this group. He invited other scientists to test his ideas. But it was years before large studies took place.

Charles Hennekens of Harvard Medical School led one of the studies. In 1983, he began to study more than 22,000 healthy male doctors over 40 years of age. Half took an aspirin every other day. The others took what they *thought* was aspirin. But it was only a placebo, an inactive substance.

Five years later, Dr. Hennekens reported that people who took aspirin reduced their risk of a heart attack. But they had a higher risk of bleeding in the brain than the other doctors.

A few years ago, a group of experts examined studies of aspirin at the request of federal health officials in the United States. The experts said people with an increased risk of a heart attack should take a low-strength aspirin every day.

Aspirin may help someone who is having a heart attack caused by a blockage in a blood vessel. Aspirin thins the blood, so the blood may be able to flow past the blockage. But experts say people should seek emergency help immediately. And they say an aspirin is no substitute for treatment, only a temporary help.

But what about reducing pain? Aspirin competes with other medicines for reducing pain and high body temperature. The competition includes acetaminophen, the active substance in products like Tylenol. It also includes ibuprofen, the active substance in products such as Advil.

Like ibuprofen, aspirin is an NSAID -- a non-steroidal anti-inflammatory drug. Several studies have found that men who take aspirin or other NSAIDs have a decreased risk of prostate cancer. The prostate is a gland and part of the male reproductive system.

Researchers at the Mayo Clinic in Minnesota wanted to see how NSAIDs might affect prostates that are enlarged, but not cancerous. They followed the health of 2,500 men for 12 years. The researchers said these drugs may delay or stop development of an enlarged prostate. They said the risk of an enlarged prostate was 50 percent lower in the NSAID users than the other men. The risk of bladder problems was 35 percent lower.

Other studies have suggested that aspirin can help with cancer prevention and survival. They showed that aspirin may help prevent cancers of the stomach, intestines and colon.

In 2008, European researchers reported that aspirin may have what they called a “long-term protective effect against colorectal cancer.” Peter Rothwell of the University of Oxford led the researchers. They found that people who took one aspirin a day for about six years reduced their risk of colon cancer by 24 percent. And, deaths from the disease dropped by 35 percent.

In 2010, the Lancet published the combined results of a larger observational study, also led by Professor Rothwell. This time, he and other researchers found that taking a small aspirin once a day reduced death rates from a number of common cancers.

Aspirin does not help everything, however. It can cause problems, like an increased danger of stomach bleeding and ulcers. And it can interfere with other medicines. Also, some people should not take aspirin. These include people who take other blood thinners or have bleeding disorders. Pregnant women are usually also told to avoid aspirin.

Research has shown a link between aspirin use and a condition called Reye's syndrome. Children's doctors say patients up to age 19 should not take anything containing salicylatic products when sick with high temperatures.

Recently, American researchers reported finding a small link between aspirin use and one kind of blindness. Age-related macular degeneration, or AMD, affects older adults. It limits their ability to see objects directly in front of them.

Barbara Klein of the University of Wisconsin led the study. She and her team found that people who regularly took aspirin for 10 years or more had a small increase in the risk of advanced or "late" AMD. "Regularly" meant at least twice a week for more than three months.

In a separate study, Australian researchers found that people who take aspirin regularly for many years are more likely to develop neovascular AMD. This study involved nearly 2,400 adults. Almost 11 percent of them identified themselves as regular aspirin users. Eye tests were performed after five, 10 and 15 years.

The researchers found that aspirin takers had twice the risk of neovascular, or "wet," AMD in comparison to non-regular aspirin users. The findings were reported in December 2012 in the Journal of the American Medical Association.

American researchers found a link between hearing loss in women and their use of ibuprofen or acetaminophen. The researchers studied information about more than 62,000 women between 31 and 48 years of age. The researchers examined how often the women reported using aspirin, ibuprofen or acetaminophen. The information covered the period from 1995 to 2009. Just over 10,000 women reported some hearing loss.

The study was the work of researchers at Brigham and Women's Hospital in Massachusetts. Lead researcher Sharon Curhan noted that NSAIDS may reduce blood flow to the cochlea, the hearing organ, and affect its ability. She noted that while such medicines can be purchased without a doctor's order, they still carry possible side effects.

Experts say most people should not take aspirin for disease prevention without first talking to a doctor because there are risks. Some researchers have even said that some people get little or no protection from aspirin. So research continues on one of the oldest and most widely used drugs in the world.

This Science in the News was written by George Grow. Our producer was June Simms. I'm Mario Ritter.

And I'm Avi Arditti. Join us again next week for more news about science on the Voice of America.

