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The Story of Aspirin

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MARIO RITTER: This is SCIENCE IN THE NEWS in VOA Special English. I'm Mario Ritter.

BARBARA KLEIN: And I'm Barbara Klein. Today, we will tell the story of aspirin.

(MUSIC)

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

But doctors also say the acid in aspirin can cause problems like bleeding in the stomach and intestines.

BARBARA KLEIN: 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 a chemical called salicin. In the eighteen hundreds, researchers discovered how to make salicylic acid from the chemical. In eighteen ninety-

seven, 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. The "a" came from acetyl. The "spir" came from the spirea plant, which also produces salicin. And the "in"? That is a common way to end medicine names.

MARIO RITTER: In nineteen eighty-two, 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 also make the heart, kidneys and blood vessels work well. But there is a problem. Aspirin works against *all* prostaglandins, good *and* bad.

BARBARA KLEIN: 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 of the enzyme 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.

But a British study released in two thousand nine suggested that taking another drug with a small amount of aspirin may help reduce the risk of bleeding. If this proves true, it would help thousands of people who are seeking to prevent life-threatening conditions.

(MUSIC)

MARIO RITTER: 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 noted this effect sixty years ago. 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 eight thousand 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.

BARBARA KLEIN: Charles Hennekens of Harvard Medical School led one of the studies. In nineteen eighty-three, he began to study more than twenty-two thousand healthy male doctors over forty years of age. Half took an aspirin every other day. The others took what they *thought* was aspirin. But it was only a placebo, a harmless substance.

Five years later, Doctor 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.

MARIO RITTER: In two thousand nine, 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 it may be able to flow past the blockage. But heart experts say people should seek emergency help immediately. And they say an aspirin is no substitute treatment, only a temporary help.

BARBARA KLEIN: 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. Like the medicine ibuprofen, aspirin is an NSAID -- a non-steroidal anti-inflammatory drug.

Several studies have found that men who take aspirin and other NSAIDS have a decreased risk of prostate cancer. The prostate is part of the male reproductive system.

MARIO RITTER: 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 two thousand, five hundred men for twelve years.

The researchers said these drugs may delay or stop development of an enlarged prostate. They said the risk of an enlarged prostate was fifty percent lower in the NSAID users than the other men. The risk of bladder problems was thirty-five percent lower.

(MUSIC)

BARBARA KLEIN: 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.

Researchers reported two years ago about people who had colorectal cancer. They found that aspirin users had an almost thirty percent lower risk of dying from their cancer. That was during an average of eleven years after the cancer was discovered.

Earlier this month, The Lancet medical journal published findings from a study of aspirin and cancer. Researchers followed almost one thousand patients who had Lynch syndrome – a genetic condition that makes them likely to develop some cancers. One group of patients took six hundred milligrams of aspirin a day for at least two years. These patients had a sixty-three percent lower risk of colorectal cancer than those who took a harmless substance or placebo. The longer they took aspirin, the lower their risk of cancer.

MARIO RITTER: This study seems to confirm a study released in two thousand eight. 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 examined twenty years of results from four large studies. The studies involved fourteen thousand people.

The researchers found that people who took one aspirin a day for about six years reduced their risk of colon cancer by twenty-four percent. And deaths from the disease dropped by thirty-five percent.

Last year, The Lancet published the combined results of a larger observational study, also led by Professor Rothwell. This time, he and researchers examined eight studies that involved more than twenty-five thousand individuals. They found that taking a small aspirin once a day reduced death rates from a number of common cancers.

BARBARA KLEIN: Aspirin does not help everything, however. It can cause problems, like an increased danger of internal stomach bleeding and ulcers. And it can interfere with other medicines, although this is true of many drugs. Also, some people should not take aspirin. People who take other blood thinners or have bleeding disorders are among this group. Pregnant women are usually told to avoid aspirin.

And research has shown a link between aspirin use and the disease Reye's Syndrome. Children's doctors say patients up to age nineteen should not take anything containing salicylatic products when sick with high temperatures.

Experts say most people should not take aspirin for disease prevention without first talking to a doctor because there are risks to taking aspirin. 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.

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MARIO RITTER: This SCIENCE IN THE NEWS was written by Christopher Cruise. Our producer was June Simms. I'm Mario Ritter.

BARBARA KLEIN: And I'm Barbara Klein. Join us again next week for more news about science in Special English on the Voice of America.