

ASPIRIN'S EVOLUTION: FOLK REMEDY TO WONDER DRUG

The story behind aspirin, a drug that costs pennies and can be bought in any grocery, drug or convenience store around the world.

Aspirin's origins

For more than six thousand years, physicians have used plant extracts to help man deal with the symptoms of disease. One such plant? Willow bark. The famous Greek doctor Hippocrates (460-377 B.C.) prescribed a bitter powder extracted from willow bark to ease the pains of childbirth; doctors also applied it to patients' skin to ease stiff, painful joints.¹⁻⁴

Willow bark first attracted serious scientific attention in 1763. An English clergyman, Reverend Edmund Stone, successfully treated 50 feverish patients with willow bark, recorded his observations and reported its medicinal effects in a letter to the Royal Society.¹ By the 1800s, European chemists identified salicylic acid as willow bark's beneficial ingredient.^{1,5}

Salicylic acid's bitter taste and corrosive effects on the stomach limited its use as a pain reliever for people with chronic pain. In 1897, a man who suffered with rheumatism begged his son, the German chemist Felix Hoffmann, to find a salicylic acid alternative that would relieve his pain without unpleasant side effects.⁶ Hoffmann and several colleagues at Bayer Corporation were able to modify the chemical structure of salicylic acid to create a drug – acetylsalicylic acid – that retained the pain relieving and anti-inflammatory qualities of salicylic acid, but with less gastric irritation. In 1899, Bayer trademarked acetylsalicylic acid under the name 'Aspirin.' By 1915, aspirin was available virtually everywhere in the world.



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Pain relief plus

What was first discovered to treat pain was soon discovered to help with other ailments as well.

Since the 1900s, scientists have known that platelets— a component of blood—release a chemical that makes them stick together. Sticky platelets lead to clot formation, which keeps people from bleeding to death. However, scientists knew that clots meant trouble, causing heart attacks if they formed in the heart and strokes if they formed in the brain.⁶

In 1948, Lawrence Craven, a physician, observed that patients who chewed excessive amounts of aspirin gum often bled so badly they had to be admitted to a hospital. They were less likely, however, to suffer from heart attacks.² Dr. Craven published his finding, but it was largely ignored. In the 1960s, scientists reconsidered why people taking aspirin were less likely to have heart attacks. They suspected that aspirin's protective effect was related to its ability to slow blood clotting.² Although scientists suspected aspirin prevented heart attacks, we entered the 1980s with no proof.⁶



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Aspirin's evolving role in prevention

Scientists all over the world now sought to unravel the mystery of how aspirin worked. They discovered that aspirin blocked production of a hormone-like substance in the body—prostaglandin—which is found in platelets and inflamed cells and is also needed to feel pain.² The world recognized this important finding by jointly awarding the 1982 Nobel Prize in medicine to Bergström, Samuelsson and Vane, the three scientists who made the discovery.⁷

In 1980 Dr. Richard Peto, a British epidemiologist, analyzed existing aspirin research using a brilliant statistical method he developed for combining clinical study results. Based on his analysis, Dr. Peto was confident aspirin could save lives.⁶ Consequently, the U.S. Food and Drug Administration (FDA) soon agreed to reevaluate the information on aspirin's use in heart disease. In 1985, 35 years after Craven linked aspirin to heart attack protection, the FDA approved aspirin to prevent recurrent heart attacks. Several years later the American Stroke Association included aspirin in its guidelines for preventing strokes in patients with a history of heart attack or stroke.

"No other drug in the world has had such a fascinating and record-breaking history – a development that has not yet come to an end."

– Sir John Vane
Nobel Prize winner knighted in 1994
for discovering how aspirin works

Experts continue to debate aspirin's benefits for disease prevention in healthy people. In 2016, the United States Preventive Services Task Force (USPSTF) renewed its determination that there was enough evidence to show that aspirin prevents heart disease in certain high-risk healthy adults.⁸

Every year, researchers publish between 700 and 1,500 scientific studies about aspirin. The Council on Aspirin for Health and Prevention is committed to objectively interpreting the literature so consumers, physicians and policy makers can stay abreast of research on aspirin's role in public health.

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