

AMERICANS WIN NOBEL IN MEDICINE

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Three Americans won the Nobel Prize in medicine Monday for discovering that the body uses nitric oxide gas to make blood vessels relax and widen -- a finding that helped lead to Viagra and could also pay off in treatments for heart disease.

In addition, it has triggered research that could lead to new treatments for cancer and septic shock.



Dr. Ferid Murad



Robert F. Furchgott



Louis J. Ignarro

The prize, announced in Sweden, went to Robert F. Furchgott, Louis J. Ignarro and Dr. Ferid Murad. Furchgott, 82, is a pharmacologist at the State University of New York Health Science Center at Brooklyn; Ignarro, 57, is at the University of California at Los Angeles; and Murad, 62, is at the University of Texas Medical School in Houston.

They will split the \$978,000 prize.

Cells in the body make nitric oxide, which, paradoxically, is also an air pollutant in auto exhaust. It is different from nitrous oxide, better known as laughing gas. The researchers discovered that the body's own nitric oxide acts as a signal, telling blood vessels to dilate. That, in turn, lowers blood pressure.

The work already has inspired a treatment for dangerously high blood pressure in the lungs of infants. Babies breathe the gas.

"Now, finally this discovery can be put to use in treatment of numerous pathologies," said Ignarro, who was reached in Naples, Italy. "The future of pharmacology is in the creation of a superaspirin that will be fundamental in the prevention of heart attacks, of cardiovascular disease, of arteriosclerosis."

Scientists were surprised when Furchgott and Ignarro reported the findings in 1986. Nitric oxide was the first gas to be identified as a signal in the body.

"It was a sensation that this simple common air pollutant ... could exert important functions" in animals and people, said the Karolinska Institute in Stockholm, which awards the prize.

The gas makes blood vessels dilate by relaxing the vessels' smooth muscles. It can help trigger erection of the penis the same way, because the relaxation lets blood flow in. Viagra was designed to work by blocking an enzyme that interferes with nitric oxide's effect.

The prize-winning work contributed "a small piece of information" to the development of Viagra, said Mariann Caprino, spokeswoman for Viagra maker Pfizer Inc.

Dr. Valentin Fuster, president of the American Heart Association, called the nitric oxide discovery "one of the most important in the history of cardiovascular medicine."

By showing the gas played an important role in the body, the researchers set off a cascade of studies that discovered other key things the gas does, Fuster said.

The wide-ranging results may pay off in new treatments for:

-- **Atherosclerosis**, a thickening of artery walls due to fatty deposits. Nitric oxide has turned out to be one of the body's main weapons against atherosclerosis, said Dr. Jonathan Stamler of the Duke University Medical Center and the Howard Hughes Medical Institute.

-- **Septic shock**, the dangerous drop in blood pressure caused by white cells pumping out too much nitric oxide in response to infections. Drugs that reduce the levels of active nitric oxide are being studied in people.

-- **Cancer**. White cells use nitric oxide to defend against tumors, and scientists are studying whether they can harness the substance's anti-cancer ability.

Murad, who worked independently of the other winners, called the Nobel announcement "a delightful surprise." Furchgott, reached at his home on New York's Long Island, said: "I'm very pleased. I truly wasn't sure I'd ever get an award like this. I wasn't sure that I deserved it."

Murad discovered in 1977 that nitroglycerin and related artery-widening compounds act by releasing nitric oxide. Furchgott later concluded that cells in the inner lining of blood vessels secrete some unknown substance that makes vessels dilate. Ignarro, working with Furchgott and independently, concluded this unknown signal is nitric oxide.

Alfred Nobel, a Swedish industrialist and inventor of dynamite, endowed the Nobel Prizes in his will. In later life, Nobel's doctor told him to take nitroglycerin -- one of the ingredients in dynamite -- for heart trouble.

"However, it would take 100 years until it was clarified that nitroglycerin acts by releasing nitric oxide gas," the Karolinska Institute said.