# Could Alzheimer's drug be on horizon?

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It's a miracle drug, a medication that can slow or even stop the progression of Alzheimer's disease. It also doesn't exist.

Humanetics Corp., though, thinks it's getting close. The Eden Prairie, Minn.-based drug company, in collaboration with the Mount Sinai School of Medicine in New York, recently released a study that suggests a natural anti-diabetic compound, dubbed NIC5-15, can help safely reduce dementia in Alzheimer's patients.

Humanetics and Mount Sinai researchers presented the results from the study Sunday at the annual International Conference on Alzheimer's Disease in Vienna.

There is no cure or long-term treatment for Alzheimer's, a neurological disease that kills brain cells and leads to memory loss and death. The few drugs today on the market can only relieve some symptoms.

"What we are doing now is what angioplasty did for coronary heart disease," said Humanetics chief medical and scientific officer Dr. John Zenk. "We are getting at the root cause of the disease rather than the symptoms."

But experts say it's much too early to know if Humanetics' drug works. Many promising treatments have come and gone over the years, frustrating researchers who have yet to determine a firm cause for the disease, much less a cure.

NIC5-15 "is a very interesting idea," said Dr. David Knopman, a professor of neurology at the Mayo Clinic and an investigator with the school's Alzheimer Research Center. "But a lot of ideas have promise but are hard to prove clinically.

"Twenty years of research has given me a thick skin. There have been so many failures, so many good ideas that didn't pan out."

For example, Humanetics' compound targets Beta-amyloids, a protein scientists have long suspected to cause Alzheimer's. But now some scientists are starting to even doubt what had been the prevailing theory in Alzheimer research.

First discovered in 1906 by German doctor Alois Alzheimer, the disease is the sixth leading cause of death in the United States, according to the Alzheimer's Association, an education and research organization.

Over 5 million Americans have Alzheimer's, which costs the federal Medicare and Medicaid programs about $112 billion each year. That number will likely grow by hundreds of thousands annually as baby boomers start to retire.

Despite years of research, drug companies have struggled to find an effective treatment. Part of the problem, Dr. Knopman of Mayo says, is timing: Symptoms only surface 20 to 30 years after patients develop the disease. By then, it's too late.

Over the past 16 years, the Food and Drug Administration has approved only five drugs to treat symptoms. But these drugs don't stop the death of brain cells and only provide about six to 12 months of relief to half the people who take them. That's why drug giants like Merk and Eli Lilly are rushing to develop medications that attack the disease, not just the symptoms.

Such a drug "would absolutely be a blockbuster," Humanetics CEO Ron Zenk said. "We want to stop the disease in its tracks before it gets worse _ before symptoms appear or when the symptoms appear."

In 2003, Dr. Giulio Pasinetti, a renowned Alzheimer's researcher at the Mount Sinai School of Medicine, discovered that a natural compound used to treat diabetic patients resistant to insulin could be used against Alzheimer's.

Two years later, Humanetics, which had been making NIC5-15 to treat diabetes, decided to license the compound from Mount Sinai and focus solely on Alzheimer's.

Clinical studies show that NIC5-15 interferes with gamma-secretase, an enzyme that turns Beta-amyloid protein into plaque that clogs and eventually kills nerve cells, Pasinetti said. More important, NIC5-15 didn't interfere with a gene that controls white blood cells and the immune system, he said.

In other words, humans can tolerate NIC5-15, even in higher doses, Pasinetti said. By contrast, Eli Lilly's experimental anti-Alzheimer's drug, which attacks the same protein, has demonstrated side effects in clinical studies.

In recent years, however, some researchers have questioned whether Beta-amyloid plaque even leads to Alzheimer's. The brain is such a complicated system that it's hard to pin down one primary cause for the disease, Dr. Knopman of Mayo said.

A landmark Alzheimer's study of nuns, now owned by the University of Minnesota, showed that nuns with plaque didn't exhibit symptoms. The study also found that nuns suffering from Alzheimer's didn't have large amounts of plaque.

Focusing on Beta-amyloids for so long may have delayed research into other possible treatments, said Orasi Medical CEO Shawn Lyndon. The Edina-based start-up, a spin-off from the U, is developing software that can help drug makers test their medications. Other companies are looking at whether nerve inflammation is a factor.

Dr. Zenk of Humanetics firmly believes plaque plays a role. The company will start a clinical study later this year with funding from the National Institutes of Health and U.S. Department of Veteran Affairs. Eventually, Humanetics hopes to partner with a large pharma company to complete the clinical trials.

"Those plaques are there," Dr. Zenk said. "They are significant. Regardless of whether there is another cause, getting after at least one of the sources of plaque is a good thing."

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