

Curry spice could alleviate cystic fibrosis

19:00 22 April 2004
NewScientist.com news service
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A spice used in curry could help alleviate cystic fibrosis, new research suggests. The tests in mice show that low doses of a component of turmeric can make most of the symptoms disappear.

"It can almost completely correct the measurable defects of the disease," says Michael Caplan at Yale University in New Haven, Connecticut, US, part of the research team.

People develop cystic fibrosis when they inherit two copies of a defective gene, CFTR, which leaves an important protein misfolded. The mishapen protein, though functional, is prevented by the cell's quality control agents from taking its rightful place at the cell surface and is instead trapped inside. Without the protein at the surface, salt has trouble moving in and out of cells.

The end result is that mucous in the airways and digestive tract becomes very thick and sticky. Bacteria get trapped and cannot be expelled through the nose and mouth, and nutrients cannot be absorbed in the gut. People with CF live on average only 32 years.

Escape mechanism

Caplan, and his Yale colleague Marie Egan, reasoned that if they could somehow disable the quality control mechanism, the protein might be allowed to get to the surface to do its work.

Lab work at the University of Toronto, Canada, has recently shown that curcumin, a component of turmeric, makes it possible for the protein to escape to the cell surface by starving the inspector proteins of calcium.

So the team decided to administer the substance to mice with a CF-like disorder. Mice with the genetic mutation suffer much more severe gastrointestinal effects but fewer respiratory ones.

The researchers gave the animals 45 mg of curcumin per kilogram of body weight for three days. The equivalent quantity is known to be well-tolerated in humans. They found that the animals' gut problems largely disappeared. There were also changes in electrical potential across the nasal epithelium, suggesting that the respiratory system was also improving. And while six of the 10 untreated mice died of intestinal problems within 10 weeks, only one curcumin-treated mouse died.

Ancient medicine

Caplan cautions that this does not necessarily mean that curcumin will work in humans. He notes that Asian people do have a much lower incidence of the disease, but says this may have more to do with population genetics than with more turmeric in their diet.

"It would be great if people had figured out 2000 years ago that this stuff works and we're just rediscovering it," he says. A human clinical trial is now being launched by the US Cystic Fibrosis Foundation.

"It is exciting from the point of view of science and cautiously hopeful from the point of view of medicine," says Neil Sweezey, at the Hospital for Sick Children in Toronto. One reason for optimism, he says, is that you may not need to get much of the protein working to significantly improve a patient's health.

Cystic fibrosis is just the latest disease that research has shown might be alleviated by turmeric. Others include inflammatory bowel disease, cancer, alcohol-related liver disease and, most recently, Alzheimer's disease.

Journal reference: *Science* (vol 304, p 600)