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## Tobacco chemical brain drug hope

**A by-product of cigarette smoke could help doctors find treatments for Alzheimer's and Parkinson's disease.**

Cotinine is formed when the body breaks down nicotine, but does not cause the same side effects, such as addiction.

Scientists from the Medical College of Georgia found that it appeared to protect brain cells and boost memory.

However, presenting their work at a conference in New Orleans, they said that patients who took up smoking would still cause more harm than good.

Both Alzheimer's and Parkinson's are degenerative brain diseases for which there is no currently no cure.

They are caused by the gradual loss of different types of brain cell.

Alzheimer's patients tend to suffer gradually encroaching memory loss and confusion, among other symptoms, while those with Parkinson's have increasing tremor and mobility problems.

### Nicotine breakdown

Nicotine is the prime habit-forming ingredient in tobacco - and while it has some pleasurable effects on the brain, it can also cause constricted blood vessels, stomach cramps and nausea.

Cotinine, long considered a relatively inert chemical, is produced when the body breaks nicotine down, and it is passed out of the body in the urine.

Tests on monkeys given a



The nicotine in tobacco may have benefits

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**“ Any benefits from the nicotine in cigarettes or other tobacco products are far outweighed by the proven harm of using those products ”**

Dr Michael Kuhar, Emory University

dose of cotinine found that it boosted their memory while playing a computer based game.

Laboratory-based work has also showed it could prevent the death of cells exposed to conditions that would normally kill them.

### More research needed

Dr Jerry Buccafusco, who led the Georgia research, said: "Many people have thought that the drug was essentially an inactive metabolite, but we have shown that at appropriate doses, it is memory enhancing, neuro-protective and it has antipsychotic activities.

"We hope this new appreciation for cotinine's potential will encourage people to take a new look at it, and if not the drug itself, perhaps design newer compounds based on its structure that have fewer side effects than existing therapies."

Dr Michael Kuhar, from Emory University, said that Parkinson's or Alzheimer's patients should not be encouraged to take up smoking in an effort to expose their brains to cotinine.

He said: "Any benefits from the nicotine in cigarettes or other tobacco products are far outweighed by the proven harm of using those products.

"But pure nicotine-like compounds as medications do show promise for treating human disorders."

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