

New ingredient in cocaine vaccine shows promise in mouse study

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A pile of cocaine hydrochloride. Credit: DEA Drug Enforcement Agency, public domain

A new ingredient added to a current cocaine vaccine appears to enhance its effectiveness in blocking the drug's "high" when tested in mice, Duke Health researchers report.

The vaccine, delivered via a liquid nose drop rather than needle injection, includes a new compound that helps the immune systems create antibody responses against cocaine. The findings are published in the journal *npj Vaccines*.

Though the new formulation of the vaccine has currently only been tested in mice, it shows promise for [human populations](#), said senior author Herman Staats, Ph.D., professor in the department of Pathology, and associate professor of Immunology and Medicine at the Duke University School of Medicine.

"By inducing antibody responses that block the activity of the drugs, we could prevent the euphoria or high that is associated with using the cocaine," said Staats, who is also a member of the Duke Human Vaccine Institute. "If the individuals do not get the 'high' from using the drug, they may be better able to remain in other treatment programs that help them recover from their addiction."

Staats and colleagues compared the movements of mice that had received cocaine with those that had received cocaine and the vaccine to determine the effects of the dosage. Vaccinated mice showed less movement, which correlates to a decreased 'high' in humans.

Cocaine is one of the most potent and addictive psychostimulants and there are no available drug therapies to treat [cocaine addiction](#). Cocaine rapidly enters the brain by crossing the [blood brain barrier](#) and exerts its effects upon the central nervous system.

An estimated 2.2 million people in the United States were users of cocaine, according to the 2017 National Survey on Drug Use and Health prepared by the Substance Abuse and Mental Health Services Administration.

More information: Ashley L. St. John et al. Novel mucosal adjuvant, mastoparan-7, improves cocaine vaccine efficacy, *npj Vaccines* (2020).
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