

Toward the first nose drops to treat brain cancer

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Scientists are reporting the development and successful initial testing of a new form of methotrexate -- the mainstay anticancer drug -- designed to be given as nose drops rather than injected. It shows promise as a more effective treatment for brain cancer, they say. The report appears in ACS' *Molecular Pharmaceutics* journal.

Tomotaka Shingaki and colleagues note that brain cancer is difficult to treat, partly because current anticancer drugs have difficulty reaching the brain. That's because the so-called blood-brain barrier (a protective layer of cells surrounding the brain) prevents medication in the blood from entering the brain. But new evidence indicates that some drugs administered through the nose, either as nose drops or nasal spray, can bypass this barrier and travel directly into the brain. Among them are drugs for migraine headaches. Until now, however, nobody knew if methotrexate might do the same.

The scientists tested methotrexate nose drops on laboratory rats with [brain cancer](#). Compared to cancer treated with an injectable form of the drug, the nose drop drug reduced the weight of tumors by almost one-third, the scientists said. "The strategy to utilize the nose-brain direct transport can be applicable to a new therapeutic system not only for [brain tumors](#) but also for other [central nervous system](#) disorders such as [neurodegenerative diseases](#)," the article noted.

More information: "Transnasal delivery of methotrexate to brain tumors in rats: A new strategy for brain tumor chemotherapy", *Molecular*

Pharmaceutics.

Provided by American Chemical Society

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