

Antibiotics could save nerves

Penicillin and its family of related antibiotics may soon have a new use: protecting nerve cells from chemical damage.

Neurotransmitters, such as glutamate, excite neurons in the brain so that electric signals can pass from one neuron to the next. However, too much glutamate outside neurons can overstimulate and kill nerves, a factor in amyotrophic lateral sclerosis (ALS) and some other diseases. To prevent glutamate from building up outside neurons, proteins called transporters shuttle the chemical back inside cells.

Pharmaceutical developers have had little success in formulating drugs to make transporters more efficient in clearing out glutamate, says Jeffrey Rothstein of Johns Hopkins University in Baltimore. "We said, 'Let's see if any existing drugs have properties that we didn't know about,'" he explains.

Rothstein's team tested 1,040 U.S. Food and Drug Administration-approved drugs to see whether they would increase the abundance of transporters in slices of rat spinal cord kept alive in lab dishes. Only penicillin and its relatives, a drug family

known as beta-lactam antibiotics, significantly raised the transporter concentrations in this neural tissue, the scientists report in the Jan. 6 *Nature*.

One of these antibiotics, ceftriaxone, showed particularly promising results. Mice that exhibited the symptoms of ALS and that received daily injections of the drug survived 10 days longer than mice that didn't receive the drug. A clinical trial scheduled for this spring will examine whether similar antibiotics can lengthen the survival of people with ALS. —C.B.



A white-
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