

## Study shows halting an enzyme can slow multiple sclerosis in mice

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Researchers studying multiple sclerosis (MS) have long been looking for the specific molecules in the body that cause lesions in myelin, the fatty, insulating cells that sheathe the nerves. Nearly a decade ago, a group at Mayo Clinic found a new enzyme, called Kallikrein 6, that is present in abundance in MS lesions and blood samples and is associated with inflammation and demyelination in other neurodegenerative diseases. In a study published this month in *Brain Pathology*, the same group found that an antibody that neutralizes Kallikrein 6 is capable of staving off MS in mice.

"We were able to slow the course of disease through early chronic stages, both in the brain and spinal cord," says lead author Isobel Scarisbrick, Ph.D., of the Mayo Clinic Department of Physical Medicine and Rehabilitation.

Researchers looked at mice representing a viral model of MS. The model is based on the theory that infection with viral infection early in life results in an eventual abnormal immune response in the brain and spinal cord. One week after being infected with a virus, the mice showed elevated levels of Kallikrein 6 enzyme in the brain and spinal cord. However, when researchers treated mice to produce an antibody capable of blocking and neutralizing the enzyme, they saw a decrease in diseases effecting the brain and spinal cord, including demyelination. The Kallikrein 6 neutralizing antibody had reduced inflammatory [white blood cells](#) and slowed the depletion of myelin basic protein, a key component of the [myelin sheath](#).

The findings in the MS model have implications for other conditions affecting the brain and spinal cord. The group has previously shown that the Kallikrein 6 enzyme, produced by immune cells, is elevated in spinal cord injury, while other studies have shown it to be elevated in animal models of stroke and patients with post-polio syndrome.

"These findings suggest Kallikrein 6 plays a role in the inflammatory and demyelinating processes that accompany many types of neurological conditions," says Dr. Scarisbrick. "In the early chronic stages of some neurological diseases, Kallikrein 6 may represent a good molecule to target with drugs capable of neutralizing its effects."

Provided by Mayo Clinic

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