

# Cancer drug a possible treatment for multiple sclerosis

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(Medical Xpress)—A drug that is currently used for cancer can relieve and slow down the progression of the autoimmune disease multiple sclerosis (MS) in rats, according to a new study published in *PLOS ONE*. The discovery, which was made by researchers at Karolinska Institutet, might one day lead to better forms of treatment for patients with MS.

Multiple sclerosis is a disease in which the immune system attacks the spinal cord and brain, damaging nerve tissues to cause visual impairment, paralysis and other neurological disabilities. There are approximately 17,000 MS victims in Sweden, most of who develop the disease between the age of 20 and 40. The disease is currently incurable, and the treatments that are able to ameliorate the symptoms can have severe side effects.

"There is a particularly urgent need to find new, efficacious drugs with minimal adverse effects for patients with MS in the relapsing phase of the disease," says Assistant Professor Ingrid Nilsson at Karolinska Institute's Department of Medical Chemistry and Biophysics.

The disease is caused when white blood cells attack the [central nervous system](#). The CNS is normally protected by the blood-brain barrier, which governs what passes through the vascular walls. However, the inflammation that MS gives rise to causes the blood-brain barrier to become more permeable for [immune cells](#) to pass through.

In this present study, the research team examined the possibility of influencing the neurological symptoms by sealing the blood-brain barrier. This they did using a common rat model in which the [immune defence](#) is stimulated by an endogenous protein in the nerve tissue that triggers an autoimmune reaction, whereby white blood cells attack the protein in the CNS to create symptoms in the rat similar to those of human MS. The rats

were then treated with [imatinib](#) (Gleevec®), a drug used for treating certain kinds of cancer and previously shown to reduce blood-brain barrier leakiness.

"Administering imatinib enabled us to slow down the progress of the disease and ameliorate neurological symptoms by preventing the influx of white blood cells from the blood into the [nerve tissue](#)," says Dr Nilsson.

The treatment with imatinib also suppressed the autoimmune reaction and reduced the number of [white blood cells](#) leaking through the blood-brain barrier. Since the drug is already used for cancer patients, a clinical study of the treatment could be conducted on MS patients in the near future.

"The treatment proved effective even when administered to animals that had already developed symptoms, which is very important in terms of its use in patients with multiple sclerosis," says Dr Nilsson.

**More information:** Imatinib ameliorates neuroinflammation in a rat model of multiple sclerosis by enhancing blood-brain barrier integrity and by modulating the peripheral immune response, *PLOS ONE*, online 20 February, 2013

Provided by Karolinska Institutet

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