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Cancer drug shows promise for treating a wide range of inflammatory diseases

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Those looking for a new treatment for a range of inflammatory diseases like arthritis, multiple sclerosis, inflammatory bowel disease, and lupus may need to look no further than a drug already available for treating cancer. In a research report published in the July 2010 print issue of the *Journal of Leukocyte Biology*, Japanese scientists use mice to show that bortezomib, currently used to treat cancers that affect white blood cells, induces cell death only in harmful (active and proliferating) T cells, leaving the rest unharmed. If the results prove true in humans, it offers hope that this drugs or others similar to it might be used to treat inflammatory diseases without the side effects of current drugs that affect all T cells equally.

"Unfortunately, there are a lot of people who are suffering from autoimmune and inflammatory disease," said Koichi Yanaba, M.D., Ph.D., a scientist from the Department of Dermatology at Nagasaki University Graduate School of Biomedical Sciences who was involved in the research. "We believe that this new-type remedy for autoimmune and inflammatory disease could successfully treat them in the near future."

To make this discovery, scientists used two groups of mice—the first treated with bortezomib and the second with saline. Researchers induced contact hypersensitivity reaction with oxazolone, a chemical allergen used for immunological experiments and found that bortezomib significantly inhibited the contact hypersensitivity responses. Results strongly suggest that bortezomib treatment enhanced T cell death by

inhibiting NF-kappa B activation, which plays a key role in regulating the immune response to infection. This in turn led to the suppression of inflammatory responses in immune cells by reducing interferon-gamma production.

"Any time you learn that a drug already on the market has the potential to be used for more illnesses than originally thought, it's a hopeful discovery," said Luis J. Montaner, D.V.M., M.Sc., D.Phil., Editor-in-Chief of the *Journal of Leukocyte Biology*, "Even if this drug is not quite as successful in humans, it raises the possibility that a similar compound could be created which would be more successful."

More information: Koichi Yanaba, Ayumi Yoshizaki, Eiji Muroi, Toshihide Hara, Fumihide Ogawa, Kazuhiro Shimizu, and Shinichi Sato. The proteasome inhibitor bortezomib inhibits T cell-dependent inflammatory responses. J Leukoc Biol 2010 88: 117-122. DOI: 10.1189/jlb.1009666

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