

HIV drug shows efficacy in treating mouse models of HER2+ breast cancer

October 6 2012

The HIV protease inhibitor, Nelfinavir, can be used to treat HER2-positive breast cancer in the same capacity and dosage regimen that it is used to treat HIV, according to a study published October 5 in the *Journal of the National Cancer Institute*.

Breast cancer is one of the most common causes of cancer deaths in the U.S. with approximately 39,520 women succumbing to the disease in 2011. HER2-positive breast cancer is known to be more aggressive and less responsive to treatments compared to other types of breast cancer. Nelfinavir has been shown to inhibit the growth of some types of cancers and has been used in clinical trials as either a chemotherapeutic agent or a radiosensitizer for cancer therapy. However, its effect on HER2-positive breast cancer is unknown.

In order to determine the effects of Nelfinavir on HER2-positive breast cancer, Joong Sup Shim, Ph.D., of the Department of Pharmacology and Molecular Sciences at Johns Hopkins School of Medicine and colleagues screened the Johns Hopkins Drug Library and identified a number of inhibitors of [breast cancer cells](#), a subset of which was then used to pharmacologically profile seven genotypically individual breast cancer cell lines. After identifying Nelfinavir as a selective inhibitor of HER2-positive cells, the researchers determined the antitumor activity of the inhibitor in mouse models of human [breast cancer](#).

The researchers found that Nelfinavir inhibited the growth of HER2-positive tumors in mice. They also found that the concentrations

of Nelfinavir needed to inhibit HER2-positive cancer cells in vitro are consistent with dosage regimens used for [HIV patients](#). "With a relatively low toxicity profile and much available information on its drug-drug interactions and on pharmacokinetics, Nelfinavir is ready for clinical testing in HER2 [breast cancer patients](#)," the authors write, adding that this discovery has, "important implications in the development of Nelfinavir and its analogs as new anticancer agents."

More information: [DOI:10.1093/jnci/djs396](https://doi.org/10.1093/jnci/djs396)

Provided by Journal of the National Cancer Institute

Citation: HIV drug shows efficacy in treating mouse models of HER2+ breast cancer (2012, October 6) retrieved 17 April 2024 from <https://medicalxpress.com/news/2012-10-hiv-drug-efficacy-mouse-her2.html>

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