

## Breast cancer risk varies among different progestins used in hormone replacement therapy

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Progestins are used in hormone replacement therapies to counteract the negative effects of estrogen on the uterus and reduce the risk of uterine cancer. However, evidence in recent studies and clinical trials has demonstrated that progestins increase the risk of breast cancer. Now, University of Missouri researchers have compared four types of progestins used in hormone replacement therapies and found significantly different outcomes on the progression of breast cancer in an animal model depending on the type of progestins used.

"Synthetic progestins have different biological effects, due to differences in their structure, stability and how they interact in the body," said Salman Hyder, the Zalk Endowed Professor in Tumor Angiogenesis and professor of biomedical sciences in the College of Veterinary Medicine and the Dalton Cardiovascular Research Center. "Clinical use of progestins requires caution. These powerful steroids should only be prescribed when a person has no latent, or dormant, cancer and does not have a family history of cancer. However, it is difficult to diagnose latent <u>tumor cells</u> in women since there are no symptoms."

In the study, researchers compared the effects of four clinically relevant progestins on <u>breast cancer</u> tumors in an animal model. The progestins used in the study were the synthetic progestin medroxporgresterone acetate (MPA), norgesterel (N-EL), norethindrone (N-ONE) and



megestrol acetate (MGA). In the United States, most women on <u>hormone replacement therapy</u> are treated with MPA, the progestin in Prempro, Hyder said.

"Although previous studies using an animal model for breast cancer found that MPA functions as a tumor promoter, this study show that N-EL and N-One, when administrated using the same protocol as used for MPA, strongly inhibited tumor development," Hyder said. "Thus progestins seem to have tumor-stage specific effects, which determine whether these will function as tumor promoters or tumor suppressors. Progestins, such as N-EL and N-ONE, may have potential as preventive agents in women with no history of breast disease or family history of breast cancer. These progestins may also have a preventive role in postmenopausal women who are at an increased risk for developing breast cancer due to ingestion of combined estrogen/progestin (MPA) hormone replacement therapy and may have early stage disease."

The chart below shows the tumor latency and tumor incidence for the four types of progestins. Tumor latency is the period from when the animal model is first exposed to tumor cells to the first signs of cancer.

## Provided by University of Missouri-Columbia

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