

# Test for hormones in blood not reflective of hormones in breast tissue; breast cancer risk

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Many studies determine hormone levels in the blood as a marker of breast cancer risk. But it hasn't been known whether these blood tests reflect what is happening in the breast tissue, where certain hormones fuel cancer. Researchers at Georgetown University Medical Center's (GUMC) Lombardi Comprehensive Cancer Center found that measuring the levels of four hormones in blood known to be linked to breast cancer doesn't necessarily reflect the levels of these hormones in the breast tissue itself.

In fact, the scientists say that blood tests used in research studies that measure these hormones could give a false impression of both the real [breast cancer](#) risk women face, and an imprecise picture of how these hormones affect breast cancer development. The findings are being presented at the Annual Meeting of the American Association for Cancer Research.

"We know from this study that measuring the hormones in a patient's blood is not sufficient but that is how many research studies looking at breast cancer risk are being conducted," says the study's lead author, Adana Llanos, a graduate student in genetics at GUMC. "Understanding how cancers develop in breast tissue is the key to prevention, and we need to understand how these hormones affect breast tissue."

The research team, led by Llanos and under the guidance of senior investigator, Peter G. Shields, MD, head of Lombardi's [Cancer Genetics](#) and Epidemiology Program, did something that has not been done

before: They tested normal breast tissue for the levels of IGF-1, IGFBP-3, adiponectin, and leptin. High levels of IGF-1 has been linked to breast cancer development, while low levels of IGFBP-3 is linked to increased risk. High levels of adiponectin and leptin are both related to obesity, which is, in itself, a risk factor for breast cancer.

"By understanding these hormones in the normal breast environment, we will have some insight into how early changes in the breast lead to breast cancer," Llanos says. The researchers asked 15 women who were undergoing breast reduction surgery to participate in the study, and then collected three samples of discarded tissue from each breast, as well as blood, and extensive epidemiological data.

They first assessed whether levels of these hormones were the same in each of the three tissue samples taken from the women, which represented different areas of the breast. "We found that the hormones were distributed in the same way across the breast, which is a good thing to know because it means that a tissue biopsy taken from one part of the breast will likely represent the breast as a whole," says Llanos.

They then tested the blood to see if levels of the hormones matched those found in the [breast tissue](#), and found that leptin, adiponectin, and IGFBP-3 correlated, whereas IGF-1 did not. But even that may be misleading, Llanos says, because [hormone](#) levels may differ between a woman's two breasts. "Breast cancer usually develops in a single breast, so it is not clear that looking at these hormones in the blood is sufficient," she says.

"If we want to know what is occurring in the breast, then we have to go to the tissue itself," Llanos says. "Measuring [blood](#) would be more convenient, but our study shows that, alas, this may not be accurate."

Source: Georgetown University Medical Center ([news](#) : [web](#))

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