



Examining Cell Similarities in Melanoma Patients

Jandova J., Perer J., Hua A., Snell J.A., Wondrak G. "Genetic Target Modulation Employing CRISPR/Cas9 Identifies Glyoxalase 1 as a Novel Molecular Determinant of Invasion and Metastasis in A375 Human Malignant Melanoma Cells In Vitro and In Vivo." *Cancers (Basel)*, 2020 May 26.

Melanoma is a serious form of skin cancer that can be deadly. This type of cancer is very dangerous because it can spread rapidly through your body, causing a lot of damage to your organs. Cancer causes a process called metabolic reprogramming, which allows the dangerous cancer cells to alter healthy cells and spread throughout the body. This is also how tumors form.

There is an enzyme in your system called glyoxalase 1 (GLO1). Generally, people with cancer in their digestive tracts have a higher expression of GLO1 in their cells than people without cancer. It has also been found that this enzyme plays a part in causing other problems in the colon, liver, lung, prostate, skin, stomach, and thyroid.

In this study, researchers wanted to find out how to slow down the spread of melanoma cancer cells to leave more time for cancer treatment to work. One goal was to test how the GLO1 expression impacted the way cancer cells resist treatment like chemotherapy. To test this, researchers removed this GLO1 enzyme from human melanoma cells. Results of their tests showed that getting rid of this GLO1 expression was beneficial because it made melanoma cells more sensitive to chemotherapy and other cancer treatments. When GLO1 was removed, it was more difficult for invasive melanoma to alter the cells and spread through the body. These results were reinforced when researchers injected mice with melanoma cells that did not have the GLO1 expression. When the GLO1 was not present in the cells injected into the mice, tumor growth slowed down.

This research is very promising for the future of treating melanoma skin cancer because it shows that deletion of GLO1 expression makes cancer cells more sensitive to chemotherapy, therefore making cancer treatments more effective. It is also helpful for doctors to notice when there is an abundance of GLO1 expression in your body. This hints that a cancer may be present, and that it has spread through the body. By targeting and removing this GLO1 expression, doctors may be able to help stop melanoma from forming tumors and spreading throughout the body.

How does chemotherapy work?

Chemotherapy helps treat cancer by preventing all cells from growing and dividing, therefore preventing cancer cells from spreading and taking over the body's healthy cells. Since treatment cannot target cancer cells specifically, healthy cells are also killed in the process. However, this treatment has a more damaging effect on cancer cells since they grow and spread much more rapidly than your body's healthy cells.

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