LIFE HACKS

Large Doses of Iron May Be Used to Kill Drug-Resistant Prostate Cancer, According to Scientists

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According to scientists, larger doses of iron may be used to destroy drug-resistant prostate cancer cells.

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There are various treatments for this type of cancer and although they work at first, the tumors usually develop resistance after a period of 18 and 24 months. This reduces the available treatment options for patients that actually help.

A group of scientists from the Medical College of Georgia, led by Dr. Chunhong Yan, are hoping that iron could be the key to a new treatment.

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It may reduce this resistance in a process known as ferroptosis.

Large Doses of Iron May Help with Drug-Resistant Prostate Cancers

Iron is a key nutrient for the red blood cells that carry oxygen throughout the body; however, excessive amounts of iron can be deadly for cells.

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Iron produces a lot of toxic free radicals that can damage the lipids which are a crucial part of the cell membrane. Lipids are vital for storing energy and for the internal signaling between cells.

Free radicals may decrease their flexibility and efficiency and cause them to die, although the exact reason why this happens is unclear.

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However, the prostate cancer cells tend to be resistant due to their lipids already being changed in a similar fashion, and thus, the cells have the needed energy for growth.

Dr. Yan and his team discovered a gene, ATF3, which is believed to be able to lower the stress threshold of the prostate cancerous cells and increase their vulnerability to an iron compound known as JKE-1674 that encourages ferroptosis.

According to Dr. Yan, when the cells take up iron, it goes through various processes and this produces plenty of ROS. Their goal is to use this side effect for the treatment of prostate cancer.

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The team got a $1.1 million idea development grant from the US Department of Defence.

They also discovered that combining one chemo medication with one of the natural mechanisms in the body may also destroy prostate cancer cells.

This drug is known as bortezomib. It activates the ATF3 gene whereas the JKE-1674 compound impedes a process known as GPX4 that divides iron and free radicals and gives the cells an

opportunity for repair.

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In clinical studies, according to Dr. yan, bortezomib isn't very effective in the treatment of prostate cancer; however, in combination with JKE-1674, it becomes more potent.

What Are the Next Plans of the Team?

The next move of the team is to do lab animal experiments and see if ferroptosis can help in the treatment of advanced prostate cancer.

They currently have a GMO mouse that produces a higher amount of ATF3 and they want to see if this will increase the prostate cancer cells' vulnerability to ferroptosis too.

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The goal is to create an effective therapy for this illness which affects around one in eight Americans.

Sources:

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