

Drug hope for acute myeloid leukemia

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Professor Richard Morgan, Director, Institute of Cancer Therapeutics, University of Bradford, UK. Credit: University of Bradford

A new drug that strips cancer cells of their "immortality" could help to treat patients suffering from one of the most aggressive forms of leukaemia.

The drug candidate, called HXR9, works by preventing the cancer cells from sidestepping the natural process that causes unhealthy and [damaged cells](#) to die, known as apoptosis.

Researchers at the University of Bradford have found the drug could be used to treat [acute myeloid leukaemia](#) (AML), which is responsible for 2,500 deaths in the UK and 265,000 worldwide each year.

The drug targets a particular family of genes, called HOX genes, which are involved in controlling the rapid growth of cells. In adults these are switched off but in cancer cells they can be turned back on. This helps to give the cancer cells the ability to continuously grow and divide by circumventing the normal mechanisms that trigger apoptosis - effectively making them immortal.

Professor Richard Morgan, Director of the Institute for Cancer Therapeutics at the University of Bradford who led the research, said HXR9 strips the cancer cells of this ability by turning off the HOX genes.

He said: "Acute myeloid leukaemia is a pretty intractable disease and doesn't respond to many treatments. This is a novel therapeutic target that hasn't been shown before to be effective against this form of leukaemia."

Previously, Professor Morgan and his colleagues have shown that HRX9 could potentially be used to treat solid cancer tumours like in prostate cancer. They are currently preparing for a clinical trial due to being next year, where a form of HRX9 will be given to cancer patients who have failed to respond to other types of treatment.

In the latest study, which is published in the journal *Oncotarget*, the researchers wanted to see if the same drug could be used to treat

difficult to treat blood cancers.

They analysed [gene expression data](#) from 269 AML patients and found an association between the activity of a group of HOX genes and the patient survival rate.

Professor Morgan and his team then tested HXR9 on [cancerous cells](#) taken from patients suffering from AML and found it caused the cancer cells to undergo a process known as necroptosis.

Necroptosis causes the cells to explode and spew their contents into the bloodstream rather than simply digesting themselves as normally occurs in apoptosis. This increases the likelihood that there will be a subsequent immune reaction against the [cancer cells](#), according to Professor Morgan.

The researchers found that when they combined HXR9 with another [drug](#), a protein kinase C inhibitor called Ro31, it enhanced the reduction in [cancer](#) growth even further.

"It could well be used in combination treatments but the initial trials will be as a single therapy," said Professor Morgan.

More information: *Oncotarget*, [www.impactjournals.com/oncotar ... \]=20023&path\[\]=63885](http://www.impactjournals.com/oncotarget/issue/20023&path[]=63885)

Provided by University of Bradford

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