

Platinum and blue light combine to combat cancer

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When it comes to health care blue lights, are usually most useful on the top of ambulances but now new research led by the University of Warwick has found a way to use blue light to activate what could be a highly potent platinum-based cancer treatment.

Research led by the University of Warwick, along with researchers from Ninewells Hospital Dundee, and the University of Edinburgh, have found a new light-activated platinum-based compound that is up to 80 times more powerful than other platinum-based anti-cancer drugs and

which can use "light activation" to kill cancer cells in a much more targeted way than similar treatments.

The University of Warwick team had already found a platinum-based compound that they could activate with ultra-violet light but that narrow wave length of light would have limited its use.

Their latest breakthrough has discovered a new [platinum](#) based compound known as trans,trans,trans-[Pt(N₃)₂(OH)₂(py)₂] that can be activated by normal visible blue, or even green, light. It is also stable and easy to work with, and it is water soluble so it can simply dissolve and be flushed out of the body after use.

The University of Warwick researchers passed the new compound to colleagues at Ninewells Hospital Dundee, who tested it on oesophageal cancer cells cultivated within lab equipment. Those tests show that once activated by [blue light](#) the compound was highly effective requiring a concentration of just 8.4 micro moles per litre to kill 50% of the cancer cells.

The researchers are also beginning to examine the compound's effectiveness against ovarian and liver cancer cells. Early results there are also excellent but that testing work is not yet complete.

Professor Peter Sadler, from the Department of Chemistry from University of Warwick, who led the research project, said:

"This compound could have a significant impact on the effectiveness of future [cancer](#) treatments. Light activation provides this compound's massive toxic power and also allows treatment to be targeted much more accurately against [cancer cells](#)."

"The special thing about our complex is that it is not only activated by

ultra-violet light, but also by low doses of blue or green light. Light activation generates a powerful cytotoxic compound that has proven to be significantly more effective than treatments such as cisplatin."

"We believe that photoactivated platinum complexes will make it possible to treat cancers that have previously not reacted to chemotherapy with platinum complexes," says Sadler. "Tumors that have developed resistance to conventional platinum drugs could respond to these complexes and with less side-effects."

More information: The research has just been published in *Angewandte Chemie*, under the title "A Potent Trans Diimine Platinum Anticancer Complex Photoactivated by Visible Light".

Provided by University of Warwick

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