

New treatment to overpower drug resistance in ovarian cancer

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Drug resistance is a major obstacle in curing ovarian cancer but new research from the Centenary Institute has discovered a treatment that kills ovarian cancer cells in a new way that can break the resistance mechanism. Published today in *Autophagy*, the researchers found the drug (FTY720) had a potent effect in human ovarian cancer cells, even in those resistant to cisplatin, the most commonly used chemotherapeutic drug currently available for the treatment of ovarian cancer.

Centenary Institute Signal Transduction Head Associate Professor Pu Xia described the findings as a breakthrough in [ovarian cancer](#) treatment because, FTY720 kills [ovarian cancer cells](#) through a unique way different to the current anti-cancer drugs. Current treatments, such as [cisplatin](#), kill ovarian cancer cells through a way of programming [cell death](#) known as apoptosis but this is often reversible or demolished by cancer cells. However, FTY720 kills cells through an irreversible process known as necrosis so the cancer cells cannot resist, repair and relapse.

Each year, around 800 Australian women die from ovarian cancer¹, and ovarian cancer remains the leading cause of death in women with gynaecological malignancies over the world.

Dr Xia said: "One of the major reasons for such a poor outcome of ovarian cancer is that the cancer cells have an ability to resist the current [chemotherapeutic drugs](#) through a protective shield, which occurs naturally or as a response to the treatment, and this survives the cancer from the treatment. Such a protective shield, uncovered by the findings

from the Xia laboratory, is built, at least partially, on a catabolic process, called autophagy, by which cells eat their own non-vital components for survival under stress conditions such as starvation or chemotherapy. Remarkably, despite this survival process being activated by ovarian cancer cells during the treatment, FTY720 is still capable of killing them effectively.

While this research is a major first step toward developing a more effective treatment for ovarian cancer, the researchers claim more pre-clinical and clinical trials are needed before the drug might be used in women with ovarian cancer. However, the researchers are optimistic that the treatment would be available as a new chemotherapeutic agent within the next several years, because this drug has been approved by the US Food and Drug Administration (FDA) for use in the treatment of multiple sclerosis and is also used in multiple clinical trials for the prevention of organ transplant rejection and the treatment of various autoimmune diseases. Recent studies have also shown anti-tumour efficacy in several types of cancers but this is the first time it has been studied for the treatment of ovarian cancer.

Provided by Centenary Institute

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