

Anti-psychotic drugs could help fight cancer

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The observation that people taking medication for schizophrenia have lower cancer rates than other people has prompted new research revealing that anti-psychotic drugs could help treat some major cancers.

A preliminary finding in the current online issue of the [International Journal of Cancer](#) reports that the anti-psychotic drug, pimozide, kills lung, breast and [brain cancer](#) cells in in-vitro laboratory experiments.

Several epidemiological studies have noted the low rate of cancer among schizophrenic patients. These studies found, for example, that these patients have lower rates of lung cancer than other people, even though they are more likely to smoke.

[Genetic factors](#) and the possibility of reduced cancer detection in patients have been considered and over the past decade [anti-psychotic drugs](#) have been suggested as possible mediators of this effect.

In the new study, pimozide was the most lethal of six anti-psychotic drugs tested by a team from UNSW and the University of Queensland. Rapidly-dividing cancer cells require cholesterol and lipids to grow and the researchers suspect that pimozide kills cancer cells by blocking the synthesis or movement of cholesterol and lipid in cancer cells.

Analysis of gene expression in test cancer cells showed that genes involved in the synthesis and uptake of cholesterol and lipids were boosted when pimozide was introduced.

To test the idea that pimozide acts by disrupting cholesterol homeostasis, the researchers combined pimozide with mevastatin, a drug that inhibits cholesterol production in cells. The two drugs were more lethal in combination against cancer cells than when either drug was used alone.

"The combination of pimozide and mevastatin increased cancer cell death," says UNSW researcher Dr Louise Lutze-Mann, a co-author of the study. "We needed a lower dose of each drug to kill the same amount of cells."

Although side-effects are associated with the use of high doses of these drugs - such as tremors, muscle spasms and slurred speech - these effects are considered to be tolerable in patients where other treatments have failed and the drugs will only be used short-term. These side-effects would be reduced if the drugs were used in combination with a lipid-lowering drug, such as mevastatin.

The researchers have also investigated the effects of olazapine , a "second-generation" antipsychotic drug, and found that it also kills [cancer cells](#) but has a better side-effect profile. When administered to patients, it accumulates in the lung, which suggests that it may prove to be most useful in treating lung cancer.

The researchers are now testing these drugs on tumour cells from brain cancers since these tumours are extremely difficult to treat and are frequently associated with poor patient prognosis. Patients diagnosed with glioblastoma, for example, survive less than one year.

The results are very promising as these drugs are greater than 50-fold more effective at killing glioblastoma cells than the chemotherapeutic drug currently in use. The researchers are also investigating the effects of these drugs on cells derived from drug-resistant childhood cancers where current chemotherapy has failed.

Another hopeful prospect is an investigation of another group of drugs, called SERMs, which are similar in structure to the antipsychotic drugs but have far fewer side-effects associated with them.

Source: University of New South Wales ([news](#) : [web](#))

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