

Unexpected use of former cancer drug

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Researchers at Lund University have unexpectedly discovered that an old cancer drug can be used to prevent rejection of transplanted tissue. The researchers now have high hopes that their discovery could lead to new treatments for both transplant patients and patients with autoimmune diseases.

The researchers behind the study, which has been published in the scientific journal *PLOS ONE*, work at the Rausing Laboratory, Lund University, where they have conducted research on [brain tumours](#) over many years.

"Our group were studying the effects of the old tumour drug Zebularine, developed in the USA in the 1960s, and by chance we discovered that it had completely unexpected effects on the immune system", says Leif Salford, Senior Professor of Neurosurgery.

"It turned out that Zebularine has the ability to subdue the reaction of the body's immune system. This could be important in situations where tissue or organs are transplanted. We also think it could be used to curb the body's attacks on its own tissue in autoimmune diseases, for instance [type 1 diabetes](#) or [rheumatoid arthritis](#)", says Dr Nittby.

In studies on animals, the researchers used rats that were made diabetic. The researchers transplanted the [islets](#) of Langerhans – [cell groups](#) in the pancreas producing insulin – from healthy rats from another kind of rat into those with diabetes. The diabetic rats were divided into two groups; one group were treated with Zebularine and the other, the control group,

did not receive any treatment. The diabetic rats that were treated with Zebularine survived for a significantly longer period than the untreated rats.

"It is very interesting that we only treated them with Zebularine for two weeks, but the effects of the treatment could be observed throughout the 90-day follow-up period.

"The findings are very exciting and are a sign that the immune system was not just generally suppressed, but that the treatment was more targeted. Neither did we see any signs of side-effects", said Dr Nittby.

The researchers are now working intensively to further refine the treatment. The next step is to teach certain cells in the immune system – the dendritic cells – to accept certain specific proteins using the Zebularine treatment.

This would mean that the treatment could be targeted even more.

"If we succeed with that, we believe it could be of clinical significance both to prevent rejection of transplanted organs and to stop the body attacking its own tissue in [autoimmune diseases](#). If this becomes a reality, I hope large groups of patients could be spared the lifelong treatment that is currently necessary to keep the immune system in check", says Professor Salford.

More information: Nittby, H. et al. Zebularine induces long-term survival of pancreatic islet allotransplants in Streptozotocin-treated diabetic rats, *PLOS ONE*. [dx.plos.org/10.1371/journal.pone.0071981](https://doi.org/10.1371/journal.pone.0071981)

Provided by Lund University

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