

What's your favourite fungus?

The One That Makes Cyclosporin to Combat Rejection in Transplant Patients

Transplant of livers, kidneys, hearts and lungs has been made possible by the discovery of Cyclosporin in 1976, a compound produced by the fungus *Tolypocladium inflatum*. The fungus was isolated from a soil sample and screened to test if any compounds produced by the fungus could be of medical use. The results were very positive as the compound Cyclosporin was found to have strong activity at suppressing the immune system (called immunosuppressive).

When a patient receives an organ transplant, the body recognizes the organ as a foreign object, just like it would a pathogen. Our bodies are programmed to eliminate such foreign things, because the object may be harmful to the body. This means that the body will naturally reject a transplant; and part of that rejection is that the organ is damaged so that it stops functioning. The detection and elimination of foreign bodies is carried out by the immune system, which is made up of several cell types that act to protect our bodies from potentially harmful organisms. Cells of the immune system are equivalent to white blood cells and a particular sort, called lymphocytes, are the cells that are able to detect foreign objects. They attach themselves to pathogens identifying them as things to be destroyed by other white blood cells.

In transplant operations the donor's organ must be accepted by the recipient's body so that it can function properly and save the life of the patient. So in transplant patients the transplanted organ needs to be protected from the patient's own immune system.

This is where Cyclosporin is used. This compound helps stop the body rejecting a transplant by stopping the production of lymphocytes. If lymphocytes are not able to increase in number there is a greater chance that the transplant will not be detected by the body, and will continue to function normally. Cyclosporin has been used in transplant operations since 1983, and is currently the most effective and widely used immunosuppressive drug.

