



Fungal Immunosuppressive Compounds

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SUMMARY

UCLA inventors have discovered a novel compound from a fungus that would have broad applicability for the treatment of human autoimmune diseases and transplantation rejection.

BACKGROUND

Endophytes, microorganisms that reside in the tissues of living plants, are relatively unstudied and potential sources of novel natural products for exploitation in medicine, agriculture, and industry. Endophytic microbes, often in tropical rainforests, make compounds that have potential uses in medicine and agriculture, such as antibiotics, antioxidants and immunosuppressants. A collection of fungal endophytes in the tropical rainforest is of particular interest since it shows strong inhibitory activity toward a common pathogen of many plant species. The compound extracted from the fungal endophyte reveals strong similarities to cyclosporin A, an important immunosuppressive drug.

Since the discovery of cyclosporin A in 1976, it has been the principal immunosuppressive agent used in medicine. In present days, in addition to cyclosporin A, tacrolimus and sirolimus also are immunosuppressants used in clinical practice and they act on T cell lymphocytes. However, all three drugs produce severe side-effects, including nephrotoxicity, beta-cell toxicity, hypertension and hyperlipidaemia.

INNOVATION

Researchers at UCLA have isolated a novel compound from an endophytic fungal microbe in a tropical rainforest that is a more effective immunosuppressant and has much lower toxicity compared to existing immunosuppressants used in clinical practice. In particular, this novel compound has strong ability to inhibit the production of IL-2 from activated CD4 T cells.

APPLICATIONS

Immunosuppressive drugs for tissue transplantation, various autoimmune diseases and with some other non-autoimmune inflammatory diseases.

ADVANTAGES

- ▶ No cytotoxicity.
- ▶ More effective immunosuppressant.

STATE OF DEVELOPMENT

The novel compound has been successfully isolated from the fungus and thorough tests have been done to assure its immunosuppressive activities and its lack of toxicity.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,765,147	07/01/2014	2008-369

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OTHER INFORMATION

KEYWORDS

immunosuppressive drugs

CATEGORIZED AS

- ▶ Medical
 - ▶ Disease: Autoimmune and Inflammation
- ▶ Agriculture & Animal Science
 - ▶ Chemicals

RELATED CASES

2008-369-0

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