

Process patent for drug developed by IIT-M, Madras Institute of Nephrology



(From left) M.S. Ananth, Director, IIT, Madras, S.Sankararaman, Department of Chemistry, IITM and Rajan Ravichandran, Director, Miot Institute of Nephrology at a press conference held in Chennai on Wednesday. Photo:S. R. Raghunathan

A drug used to remove excess phosphates from the blood, jointly developed by IIT-Madras (IIT-M) and the Madras Institute of Nephrology (MIN), has been granted a process patent.

The drug is commercially available after the researchers passed on the technology to an indigenous pharma company. It costs one tenth the price of similar medicines available in Europe and America and also eases availability issues.

The polymer-based organic phosphate binders were first introduced in the US market nearly 10 years ago. “However, because of high cost and difficulty in availability, patients with kidney

failure in India could not access it,” said Rajan Ravichandran, director, MIOT Institute of Technology, who also put forth the proposal to the IIT initially.

The new methodology was designed by S. Sankararaman of the Department of Chemistry. He said the initial task was to understand the basis of the molecular framework. Once that was accomplished, the molecule had to be synthesised and, finally, technology transfer was done for commercial production.

How it works

The drug, prescribed in doses appropriate to each patient, has to be taken orally with the meal. It acts as a phosphate binder, latching itself onto the phosphate derived from the food as an insoluble gel and is finally excreted. “These phosphate binders are important in the treatment of dialysis of patients with chronic kidney disease. The excess phosphate that builds up in the serum of such patients needs to be removed as it cause other problems such as blockage of blood vessels,” Dr. Ravichandran explained.

Traditionally, metal salts such as calcium carbonate and aluminium hydroxide are used in treatment. However, they have significant side effects, including harmful effects on the stomach. The drug developed by IIT and MIN, available in the market since 2006, has been proven to be less harmful on the stomach and patients have not suffered from major side effects, Dr. Ravichandran said. In addition, it has been noticed that the drug has a beneficial side effect too – it lowers cholesterol.

Removing excess phosphates from the blood has an impact on prolonging the longevity of the patient.

Greater efficacy

Prof. Sundararaman said applications had been made for product patents for several derivatives from the original drug. These show greater efficacy than the original drug in phosphate-binding. “One of the derivatives showed twice the efficiency of the original drug in removing excess phosphate in laboratory experiments and is also likely to be softer on the patient's tummy.” M.S. Ananth, Director, IIT- Madras, said the project was taken up under the Socially Relevant Projects initiative of the Institute. It was one of the first projects taken up, as early as 2003.

Job Kurian, dean, IC and SR, IIT-Madras, said Socially Relevant Projects was first taken up with funding from the Institute, and later funded by a couple of batches of alumni