

New process patent granted to IIT Madras and MIN for a drug used in dialysis patients with chronic kidney disease

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The collaboration between a medical doctor from Madras Institute of Nephrology (MIN) and an organic chemist from IIT Madras has resulted in the development of an improved single stage process for the synthesis of a polymeric phosphate binder and several softer derivatives of the phosphate binder to be used in the treatment of dialysis patients.

Two Indian patents have been filed jointly by IIT Madras and MIN on these new developments in 2006 and one patent has already been granted recently. Dr Rajan Ravichandran, present director, MIOT Institute of Nephrology, proposed the problem of making polymer resin based organic phosphate binders in India to professor S Sankararaman at IIT Madras. These phosphate binders are important in the treatment of dialysis patients with chronic kidney disease. The excess phosphate (hyperphosphatemia) that builds up in serum of such patients needs to be removed as they cause other problems such as blockage of blood vessels due to build up of calcium phosphate plaque. Traditionally metal salts such as calcium carbonate and aluminium hydroxide were used for this treatment.

The polymer based organic phosphate binders were first introduced in the US market nearly 10 years ago. However in India this drug was introduced in the market only in 2006. Based on a methodology developed by professor S Sankararaman under the Socially Relevant Projects initiatives of IIT Madras, the process was transferred to a private pharma company. Prior to this technology transfer this drug was not available in the Indian market and treatment was very expensive, according to information from the IIT.

The new methodology developed and patented recently is more efficient. It is a single stage process and hence cost effective. In addition several derivatives of the drug developed recently for which patent grant is awaited show better 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 the laboratory experiments and it is also likely to be softer on the patients' tummy. These new derivatives are likely to be more efficient (lower dosage) and more palatable for the patients with chronic kidney disease and also bring down the cost of treatment, the researchers claimed.