Generic transplant drugs as good as brand name, study finds

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Rita Alloway, PharmD, director of transplant clinical research within the University of Cincinnati (UC) Department of Internal Medicine, with Sander Vinks, PharmD, UC professor of pediatrics and director of the Division of Clinical Pharmacology at Cincinnati Children's Hospital Medical Center. Credit: University of Cincinnati

A University of Cincinnati (UC)-led research team has found that generic formulations of tacrolimus, a drug used post-transplant to lower the risk of organ rejection, are just as good as the name-brand version.

The findings were presented Sunday, May 3, by lead investigator Rita Alloway, PharmD, UC research professor of medicine and director of transplant clinical research within the UC Department of Internal Medicine, and her study collaborators at the 2015 American Transplant Congress annual meeting in Philadelphia.

Funded by the U.S. Food and Drug Administration (FDA), the study was a prospective, blinded, six-way crossover study in kidney and liver transplant patients. It tested whether the two most disparate generics, based on potency, purity and dissolution ("Generic Hi" and "Generic Lo"), are bioequivalent to the drug tacrolimus (Prograf) in stable transplant patients.

The researchers analyzed a total of 70 patients who were transplanted at either University of Cincinnati Medical Center or The Christ Hospital (Cincinnati) transplant programs. Patients were given brand name tacrolimus or one of two generic versions.

"We found there to be essentially no difference in the formulations between the generics and brand-name version," says Alloway. "In other words, if you were on brand and switched to generic—and you take your medication as instructed—there should be no clinical consequence."

Alloway stresses, however, that despite their team's findings, patients are still encouraged to report any product concerns to the FDA.

The findings are important, says Alloway, because while more than 70 percent of tacrolimus dispensed is generic—with no consistent negative reports—physicians and patients still have concern over the use of

generics post-transplant.

"Most immunosuppressant drugs require individualized dosing and careful management to ensure the proper blood concentrations are maintained," says Alloway. "Too high exposure to these drugs increases the risk of toxicity, over-immunosuppression and cancer in patents. Too low exposure may lead to rejection of the organ by the patient's immune system."

Alloway says it's these strict conditions that cause concern that the quality, pharmacokinetics and therapeutic efficacy of new drugs may differ from the branded, or innovator, product.

To analyze drug levels and pharmacokinetics as well as pharmacogenetics, Alloway collaborated with Uwe Christians, MD, PhD, professor of anesthesiology at the University of Colorado, and Sander Vinks, PharmD, PhD, UC professor of pediatrics and director of the Division of Clinical Pharmacology at Cincinnati Children's Hospital Medical Center.

"Drs. Christians and Vinks provided expertise in tacrolimus level analysis and pharmacokinetic-pharmacogenetic data analysis," says Alloway. "The study design incorporated the most sensitive and specific tacrolimus level analysis while evaluating different methods of bioequivalence data analysis."

Alloway and team will continue this important research through an FDA-funded study of patients who are at risk of experiencing lower concentrations and subsequent rejection episodes because they have been shown to require larger doses of tacrolimus to attain therapeutic blood concentrations.

Those data, Alloway says, "will allow us to characterize unique factors

which may affect tacrolimus levels to identify if formulation has an effect in this enriched population."

Provided by University of Cincinnati Academic Health Center