

CLINICAL STUDIES

STUDY	ORGAN GROUP	BRAND OF TACROLIMUS	DESIGN	RESULTS
Alloway et al. (2017) ¹	35 RENAL 36 LIVER	Prograf Sandoz Dr. Reddy	Randomized, crossover using pharmacokinetic parameters to establish bioequivalence	Bioequivalence between Prograf and alternate brands using FDA metrics.
Arns et al. (2017) ²	81 de novo RENAL	44 Prograf 37 TacHexal (Sandoz)	Multicentre, randomized, open-label compared pharmacokinetic data and clinical characteristics of Prograf vs. TacHexal	No relevant difference in pharmacokinetic parameters at 1 month post-transplant and trough concentrations at 3 and 6 months.
Barbour et al. (2018) ³	17 patients with Glomerulonephritis	Prograf to Sandoz	Conversion study	No difference in the mean tacrolimus levels. Only 2 patients required dose adjustments. No disease flare ups or increased side effects.
Bloom et al. (2013) ⁴	68 RENAL (SUBPOPULATIONS: FEMALE, AFRICAN-AMERICAN, DIABETES, USE OF STEROIDS)	Prograf Sandoz	Randomized, crossover using pharmacokinetic data to establish bioequivalence	Sandoz is expected to offer comparable bioavailability to Prograf regardless of patient characteristics.
Naicker et al. (2017) ⁵	37 PEDIATRIC RENAL	Prograf to Sandoz	Retrospective, cohort conversion study by measuring 3 pre-conversion tac trough and creatinine and 3 post-conversion levels at day 3,10,X.	Pediatric renal transplant recipients can be converted from tacrolimus Prograf to Sandoz with negligible change metrics or allograft function.
Spence et al. (2012) ⁶	234 RENAL, LIVER, HEART	Prograf Alternate	Retrospective analysis	Alternate brand shows comparable trough levels as Prograf. No adverse events reported.

BIBLIOGRAPHY:

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² Arns, W., Huppertz, A., Rath, T., Ziefle, S., Rump, L., Hansen, A., . . . Schenker, P. (2017). Pharmacokinetics and Clinical Outcomes of Generic tacrolimus (Hexal) versus Branded Tacrolimus in De Novo Kidney Transplant Patients: A Multicentre, Randomized Trial. *Transplant Journal*, 2788-2780. Retrieved from <https://insights.ovid.com/crossref?an=00007890-201711000-00026>

³ Barbour, S., Lo, C., Espino-Henandes, G., Jagbir, G., & Levin, A. (2018). The BC Glomerulonephritis Network: Improving Access and Reducing the Cost of Immunosuppressive Treatments for Glomerular Diseases. *Canadian Journal of Kidney Health and Disease*, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5863862/>.

⁴ Bloom, R., Trofe-Clark, J., Wiland, A., & Alloway, R. (2013). A randomized, crossover pharmacokinetic study comparing generic tacrolimus vs. the reference formulation in subpopulations of kidney transplant patients. *Clinical Transplantation*, E685-E693, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3472020/>.

⁵ Naicker, D., Reed, P., Ronaldson, J., Kara, T., Wong, W., & Prestidge, C. (2017). Nationwide conversion to generic tacrolimus in pediatric kidney transplant recipients. *Pediatric Nephrology*, 2125-2131, <https://www.ncbi.nlm.nih.gov/pubmed/28660366>.

⁶ Spence, M., Nyugen, L., Hui, R., & Chan, J. (981-987). Evaluation of clinical and safety outcomes associated with conversion from brand-name to generic tacrolimus in transplant recipients enrolled in an integrated health care system. *American College of Clinical Pharmacy*, <https://accpjournals.onlinelibrary.wiley.com/doi/full/10.1002/phar.1130>.