

## Estimation of Abbreviated Mycophenolic Acid Area Under the Concentration-Time Curve During Early Posttransplant Period by Limited Sampling Strategy

Mohammadpour, A.-H.<sup>a</sup>, Nazemian, F.<sup>b</sup>, Abtahi, B.<sup>a</sup>, Naghibi, M.<sup>b</sup>, Gholami, K.<sup>e</sup>, Rezaee, S.<sup>c</sup>, Nazari, M.-R.A.<sup>d</sup>, Rajabi, O.<sup>a</sup>

<sup>a</sup> School of Pharmacy, **Mashhad University of Medical Sciences** (MUMS), Iran

<sup>b</sup> Nephrology Ward, Department of Internal Medicine, Imam-Reza Hospital, Iran

<sup>c</sup> School of Pharmacy, Ahwaz **University of Medical Sciences** (AUMS), Iran

<sup>d</sup> School of Pharmacy, Shahidbeheshti **University of Medical Sciences**, Iran

<sup>e</sup> School of Pharmacy, Tehran **University of Medical Sciences** (TUMS), Iran

[View references \(7\)](#)

### Abstract

Area under the concentration curve (AUC) of mycophenolic acid (MPA) could help to optimize therapeutic drug monitoring during the early post-renal transplant period. The aim of this study was to develop a limited sampling strategy to estimate an abbreviated MPA AUC within the first month after renal transplantation. In this study we selected 19 patients in the early posttransplant period with normal renal graft function (glomerular filtration rate > 70 mL/min). Plasma MPA concentrations were measured using reverse-phase high-performance liquid chromatography. MPA AUC<sub>0-12h</sub> was calculated using the linear trapezoidal rule. Multiple stepwise regression analysis was used to determine the minimal and convenient time points of MPA levels that could be used to derive model equations best fitted to MPA AUC<sub>0-12h</sub>. The regression equation for AUC estimation that gave the best performance was  $AUC = 14.47 * C_{1.5} + 10.047$  ( $r^2 = .882$ ). The validation of the method was performed using the jackknife method. Mean prediction error of this model was not different from zero ( $P > .05$ ) and had a high root mean square prediction error (8.06). In conclusion, this limited sampling strategy provided an effective approach for therapeutic drug monitoring during the early posttransplant period. © 2008.

### Indexed Keywords

**EMTREE drug terms:** creatinine; mycophenolic acid; prednisolone

**EMTREE medical terms:** adult; anthropometry; area under the curve; article; blood level; clinical article; creatinine blood level; demography; drug monitoring; female; glomerulus filtration rate; graft recipient; graft rejection; human; Iran; kidney function; kidney graft; male; multiple regression; patient information; postoperative care; priority journal; reversed phase high performance liquid chromatography; risk factor; validation process

**MeSH:** Adolescent; Adult; Antibiotics, Antineoplastic; Area Under Curve; Chromatography, High Pressure Liquid; Creatinine; Cyclosporine; Drug Therapy, Combination; Female; Humans; Immunosuppressive Agents; Kidney Transplantation; Male; Middle Aged; Mycophenolic Acid; Postoperative Period; Prednisolone; Sample Size; Young Adult

*Medline is the source for the MeSH terms of this document.*

**Chemicals and CAS Registry Numbers:** creatinine, 19230-81-0, 70-27-0; mycophenolic acid, 23047-11-2, 24280-93-1; prednisolone, 00-24-8; Antibiotics, Antineoplastic; Creatinine, 70-27-0; Cyclosporine, 09870-13-3; Immunosuppressive Agents; mycophenolate mofetil, 128794-94-0; Mycophenolic Acid, 24280-93-1; Prednisolone, 00-24-8

**ISSN:** 00141340 **CODEN:** TRPPAS **Source Type:** Journal **Original language:** English

**DOI:** 10.1016/j.transproceed.2008.08.133 **PubMed ID:** 19104622 **Document Type:** Article