Simulación PKPD-VK

Ivermectina en el tratamiento de infección por SARS-CoV-2

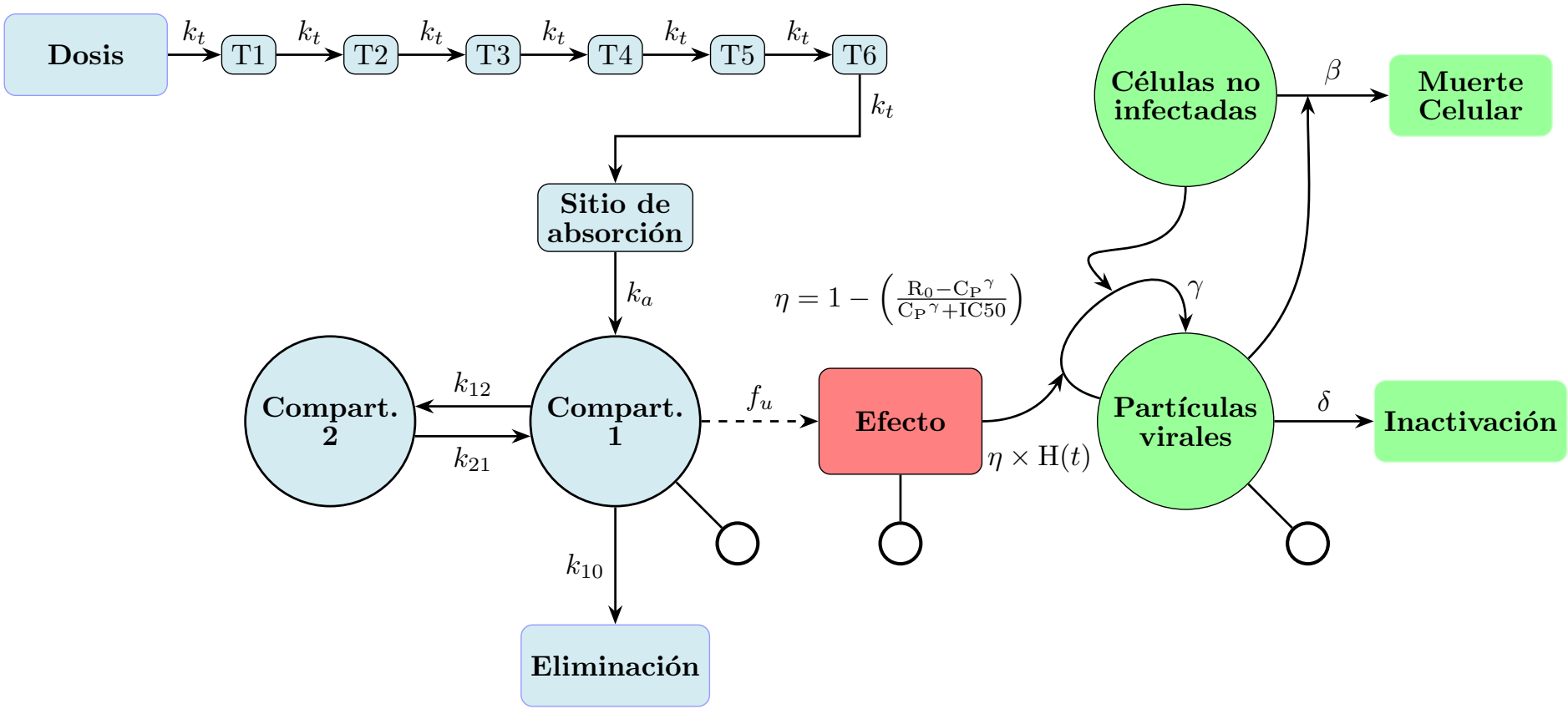
Daniel S. Parra G.

Universidad Nacional de Colombia

10 de julio de 2020

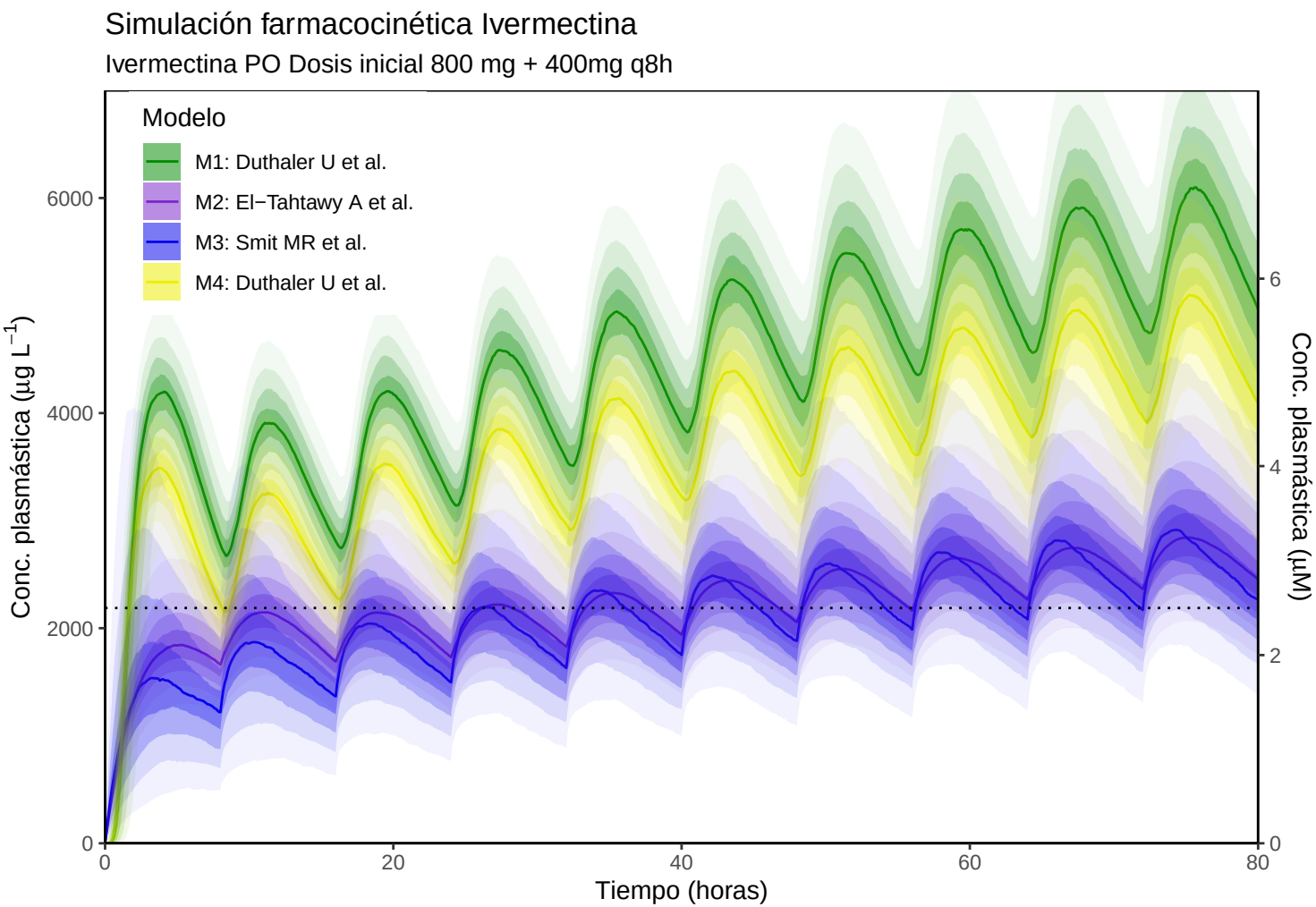
Contenido

Modelo combinado



Modelo PK: Duthaler U, Suenderhauf C, Karlsson MO, et al. Population pharmacokinetics of oral ivermectin in venous plasma and dried blood spots in healthy volunteers. Br J Clin Pharmacol 2019; 85: 626–633.
Modelo PD: Caly L, Druce JD, Catton MG, et al. The FDA-approved Drug Ivermectin inhibits the replication of SARS-CoV-2 in vitro. Antiviral Res 2020; 104787.
Modelo VK: Kim KS, Ejima K, Ito Y, et al. Modelling SARS-CoV-2 Dynamics: Implications for Therapy. medRxiv 2020; 2020.03.23.20040493.

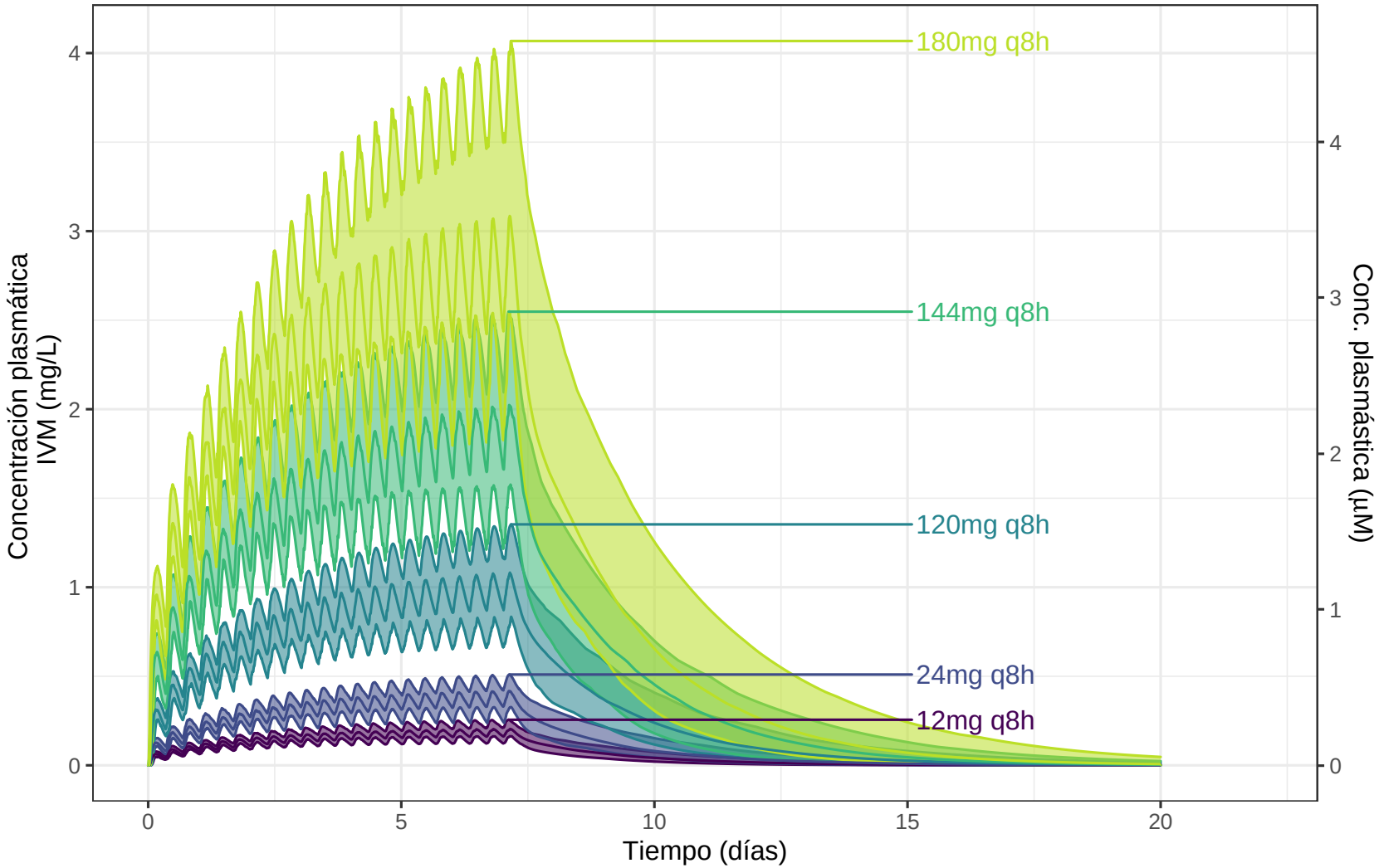
Simulación PK de ivermectina



Marc Lavielle (2019). mlxR: Simulation of Longitudinal Data. R package version 4.1.0. https://CRAN.R−project.org/package=mlxR
[M1] Duthaler U, et al. Population pharmacokinetics of oral ivermectin in venous plasma and dried blood spots in healthy volunteers. Br J Clin Pharmacol. 2019; 85(3):626–33. [M2] El−Tahtawy A et al. The effect of azithromycin on ivermectin pharmacokinetics − A population pharmacokinetic model analysis. PLoS Negl Trop Dis. 2008; 2 (5) [M3] Smit MR, Ochomo EO, Waterhouse D, Kwambai TK, Abong'o BO, Bousema T, et al. Pharmacokinetics −Pharmacodynamics of High−Dose Ivermectin with Dihydroartemisinin−Piperaquine on Mosquitocidal Activity and QT−Prolongation (IVERMAL). Clin Pharmacol Ther. 2019;105(2):388–401. [M4] Duthaler U, Leisegang R, Karlsson MO, Krähenbühl S, Hammann F. The effect of food on the pharmacokinetics of oral ivermectin. J Antimicrob Chemother. 2020;75(2):438–40.

Farmacocinética

Farmacocinética de ivermectina; tratamiento por 7 días

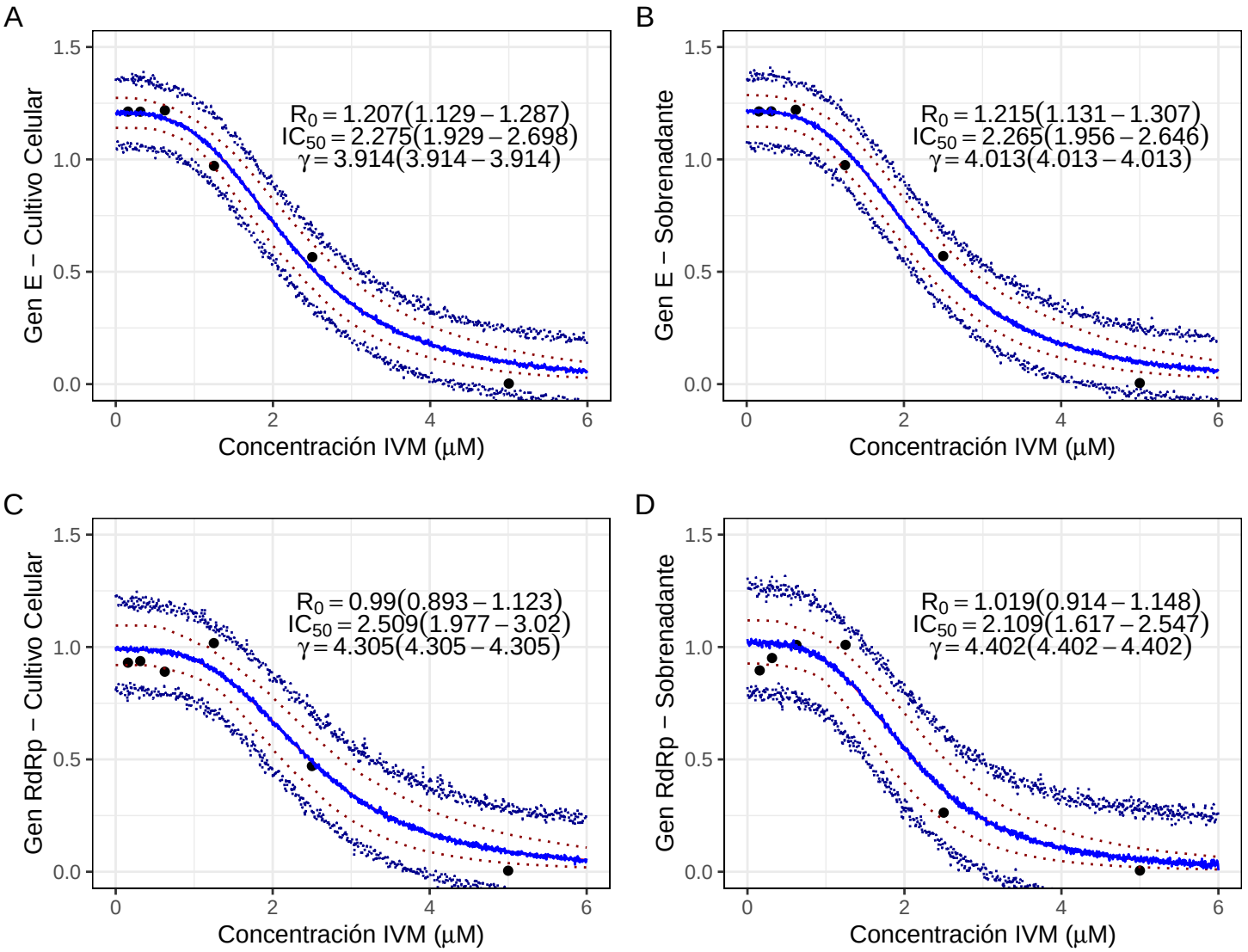


PK: Duthaler U, Suenderhauf C, Karlsson MO, Hussner J, Meyer zu Schwabedissen H, Krähenbühl S, et al. Population pharmacokinetics of oral ivermectin in venous plasma and dried blood spots in healthy volunteers. Br J Clin Pharmacol. 2019;85(3):626–33.

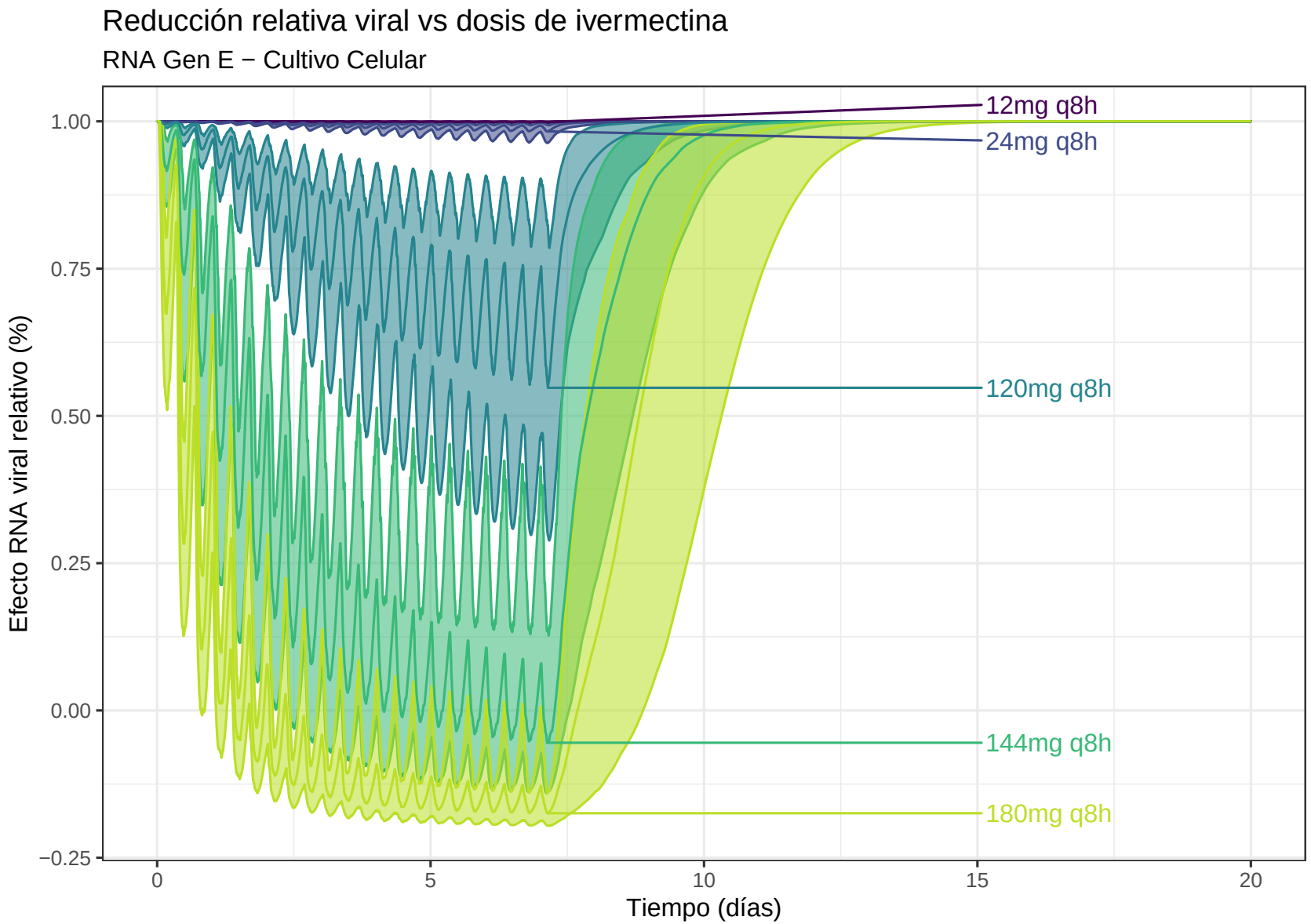
Modelamiento PD ivermectina

Inhibición replicación SARS−II COVID−19

Estimación bayesiana algoritmo NUTS − Ivermectina

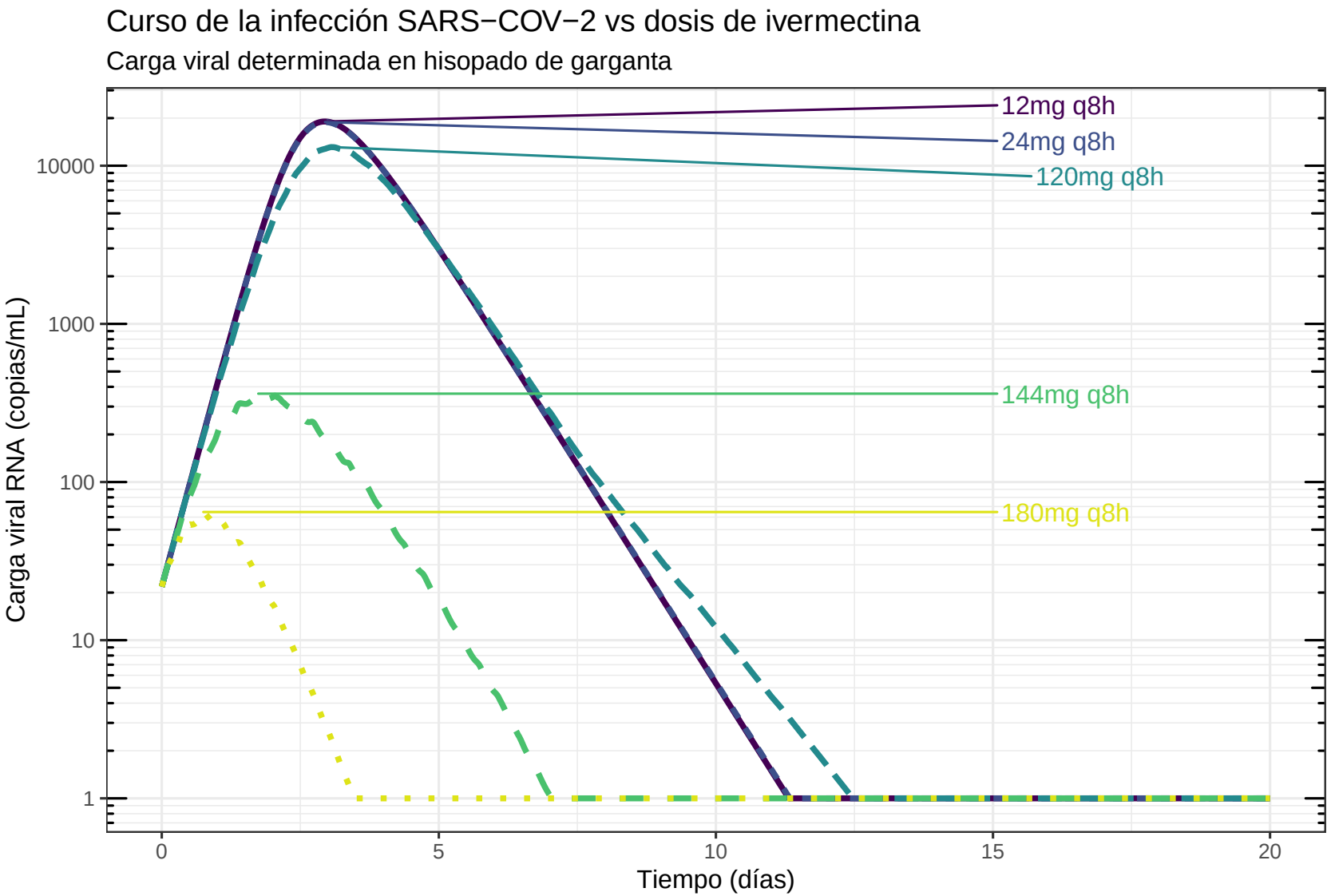


Farmacodinámica



PD: Caly L, Druce JD, Catton MG, Jans DA, Wagstaff KM. The FDA−approved Drug Ivermectin inhibits the replication of SARS−CoV−2 in vitro. Antiviral Res. 2020:104787.

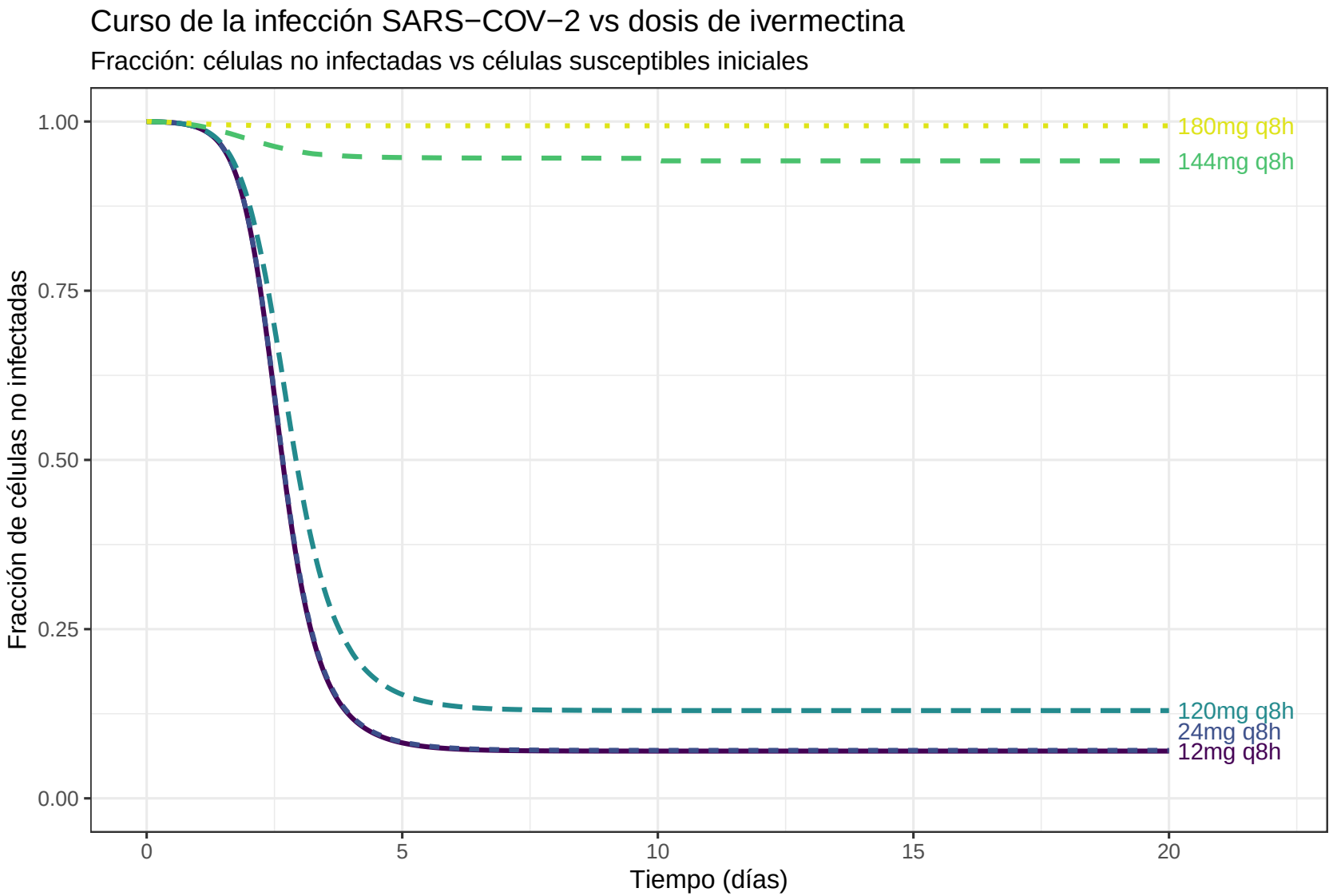
Cinética viral (1)



Farmacodinamia: Caly L, Druce JD, Catton MG, Jans DA, Wagstaff KM. The FDA−approved Drug Ivermectin inhibits the replication of SARS−CoV−2 in vitro. Antiviral Res. 2020;104787.

Cinética viral: Kim KS, Ejima K, Ito Y, Iwanami S, Ohashi H, Koizumi Y, et al. Modelling SARS−CoV−2 Dynamics: Implications for Therapy. medRxiv. 2020;2020.03.23.20040493.

Cinética viral (2)



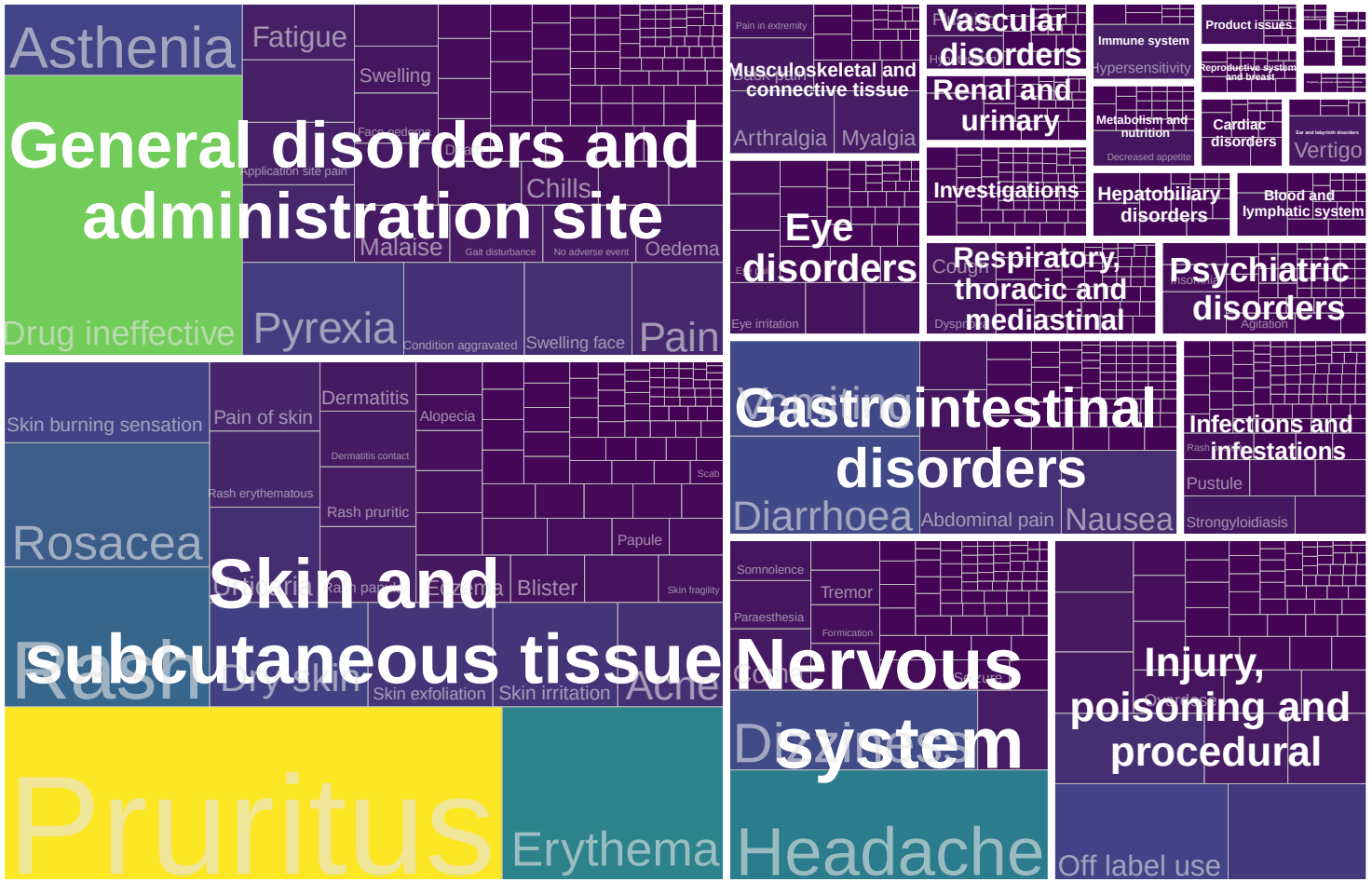
Farmacodinamia: Caly L, Druce JD, Catton MG, Jans DA, Wagstaff KM. The FDA−approved Drug Ivermectin inhibits the replication of SARS−CoV−2 in vitro. Antiviral Res. 2020;104787.

Cinética viral: Kim KS, Ejima K, Ito Y, Iwanami S, Ohashi H, Koizumi Y, et al. Modelling SARS−CoV−2 Dynamics: Implications for Therapy. medRxiv. 2020;2020.03.23.20040493.

Treemap Ivermectina

Treemap of Adverse Drug Reactions (ADR) with Ivermectin

ADR total count: 8613; The area of each square represents the number of reported cases.



Adapted from: Uppsala Monitoring Center. Vigiaccess. Available at: http: //www.vigiaccess.org/ [Accessed: July 2020]

Made by DSPG