Universidad Autónoma del Estado de Hidalgo

Instituto de Ciencias de la Salud

MODELO ABIERTO DE DOS COMPARTIMIENTOS (MADC)

FARMACOCINÉTICA BÁSICA

DRA. EVA MARÍA MOLINA TRINIDAD

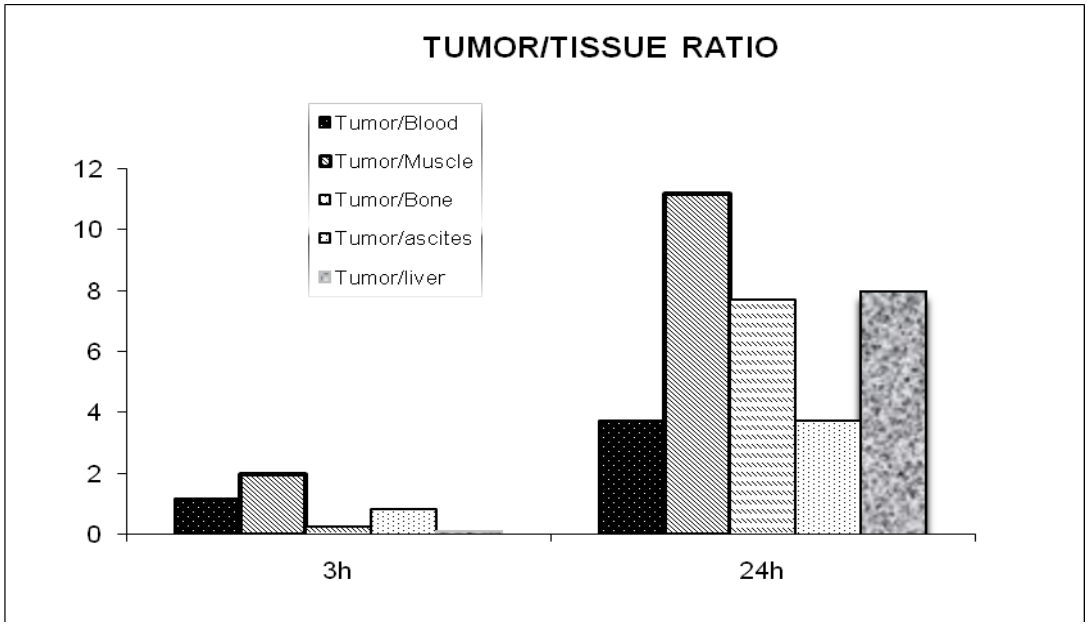
El modelo abierto de dos compartimientos esta representado por la siguiente ecuación biexponencial:

$$Cp = Ae^{-\alpha t} + Be^{-\beta t}$$

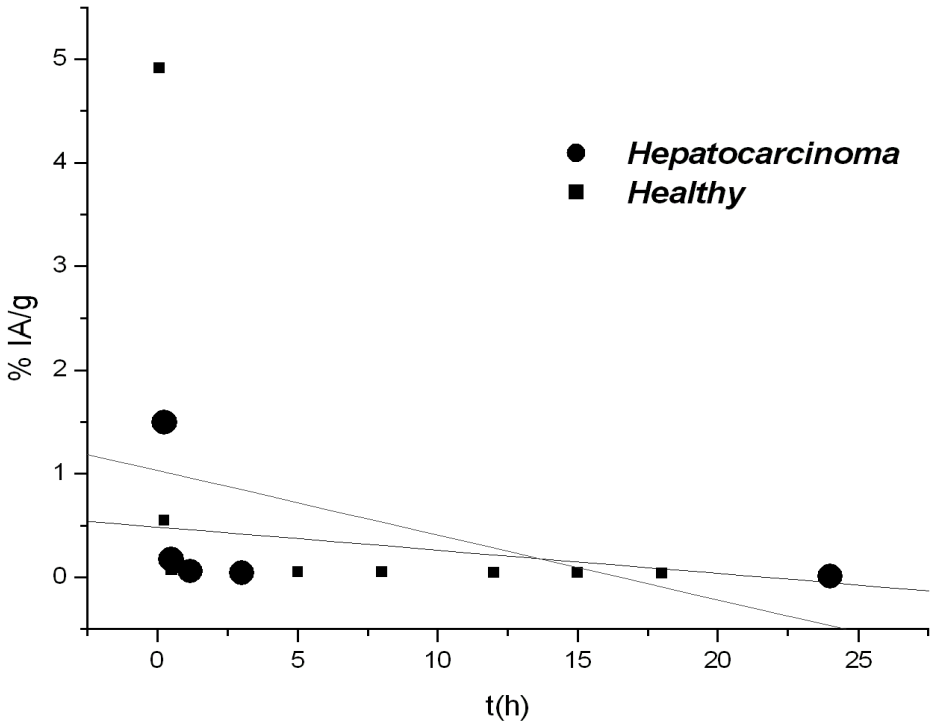
Donde α y β representan las constantes de transferencia entre un compartimiento central 1 y un segundo compartimiento periférico 2.

Es útil para seguir el monitoreo de fármacos en níveles plasmáticos cuyas concentraciones del mismo en plasma se ajustan a este modelo en estudios farmacocinéticos.

Biodistribución de un radiofármaco



Perfil farmacocinético



Parámetros farmacocinéticos (MADC)

	Healthy rats			Rats with hepatoma		
	Estimated	SE	%CV	Estimated	SE	%CV
A (%µCi/g ml)	48.58	1.05	2.17	18.30	0.03	0.14
B (%µCi/g ml)	0.07	0.01	10.50	0.06	0.00	0.18
Alpha elimination constant (h−1)	9.23	0.09	0.97	10.18	0.01	0.06
Beta elimination constant (h−1)	0.04	0.01	37.39	0.02	0.00	1.04
AUC (%µCi/g ml*h)	7.54	0.24	3.20	6.01	0.07	1.12
K10-HL (h)	0.11	0.00	3.50	0.23	0.00	1.19
Alpha-HL (h)	0.08	0.00	0.44	0.07	0.00	0.09
Beta-HL (h)	22.55	3.10	13.76	48.14	0.85	1.77
K10 (1/h)	6.44	0.23	3.49	3.05	0.04	1.20
K12 (1/h)	2.76	0.21	7.61	7.09	0.03	0.48
K21 (1/h)	0.04	0.01	10.58	0.05	0.00	0.64
Vd (ml)	2.06	0.02	0.99	5.45	0.01	0.23
Cp0 (%µCi/g ml)	48.61	0.48	0.99	18.34	0.04	0.23
Cl (ml/h)	13.26	0.42	3.20	16.63	0.19	1.13
AUMC (%µCi/g ml*h)2	74.73	18.07	24.17	293.06	9.89	3.37
MRT (h)	66.58	2.09	3.134	95.50	1.10	1.15
Vss (ml)	131.30	23.63	18	810.37	9.39	1.16

Abstract

The two-compartment open model is represented by the following biexponential equation:

$$Cp = Ae^{-\alpha t} + Be^{-\beta t}$$

Where α and β represent the constants of transfer between a central compartment 1 and a second peripheral compartment 2.

It is useful to continue monitoring plasma levels of drugs whose plasma concentrations of the same fit this model in pharmacokinetic studies.