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Corrigendum

Corrigendum to "Transdermal drug pharmacokinetics in man: Interindividual variability and partial prediction" [Int. J. Pharm. 367 (1–2) (2009) 1–15]

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ABSTRACT

The original article to which this Corrigendum refers was published in *International Journal of Pharmaceutics* 367 (1–2) (2009) 1–15.

A database of human dermatopharmacokinetic parameters of 12 transdermal patches is established. The effect of system design, application site, and metabolism on pharmacokinetic data is discussed, and interindividual variability of data and its possible sources evaluated. Using multiple regression analysis, two equations based on drugs physicochemical characteristics are suggested for partial prediction of peak plasma concentration (C_{max}) after patch application. Patch application presumably decreases variance as rub-off, wash and exfoliation steps are diminished.

The results showed that interindividual variation, in terms of coefficient of variation (CV) of C_{max}, is inversely correlated with drugs molecular weight and lipophilicity in the range of $200 < MW < 400$ and $1.6 < \log K_{oct} < 4.3$. Multiple regression analysis of C_{max} against physichochemical parameters demonstrated the prominent contribution of hydrogen bonding acceptability of the molecules on their maximal plasma concentration after patch administration.

The findings suggest that the serum concentration profile for transdermal therapeutic systems (TTS) is a net result of the system performance, drug absorption and elimination. Thus the variability in serum concentration is a function of variability of each process involved. This should be noted in explanation of effect of molecular features of drugs on their plasma concentration profile.

In page 7, in Eq. (4), the unit for C_{max} should be ml^{-1} instead of ng/ml.

The correct format of Table 4, in which the column for normalized C_{max} values is revised, is shown below.

Table 4
TTS systems considered in the analysis, their dose-normalized C_{max}, and physicochemical descriptors.

TTS name	Dose-normalized C_{max} (ml^{-1})	MW (g/mol)	$\log K_{oct}$	E^a	S^b	HA^c	HD^d	V^e
TD Scop	2.16E−06	303.35	1.24	1.686	2.03	5	1	2.2321
Oxytrol	3.07E−06	357	4.3	1.52	1.41	4	1	3.0091
Androderm	8.21E−07	288.42	3.32	1.54	2.59	2	1	2.3827
Catapress	6E−07	231	0.53	1.6	1.5	3	2	1.5317
Exelon	1E−06	250.34	1.98	0.95	1.45	3	0	2.1176
OrthoEvra/Evra	9.44E−07	327.46	4	2.08	2.7	3	2	2.6783
Climara-pro	5.23E−07	312.44	3.11	1.9	2.84	2	1	2.5785
Daytrana	1.66E−06	233.31	2.54	1.01	1.77	3	1	1.9092

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Table 4 (*Continued*)

TTS name	Dose-normalized C_{max} (ml^{-1})	MW (g/mol)	log K_{oct}	E^a	S^b	HA[c]	HD[d]	V^e
Duragesic	5.74E−07	336.5	4.05	1.83	1.75	2	0	2.8399
EMSAM	2.98E−07	187.3	2.7	0.866	1.01	1	0	1.7166
Climaderm	2.03E−07	272.39	4.01	1.8	1.74	2	2	2.1988
Climara	3.66E−07	272.39	4.01	1.8	1.74	2	2	2.1988
Alora	1.5E−06	272.39	4.01	1.8	1.74	2	2	2.1988
Estraderm	1.73E−06	272.39	4.01	1.8	1.74	2	2	2.1988
Estradiol-Mylan	4.17E−07	272.39	4.01	1.8	1.74	2	2	2.1988
Estradot	3E−06	272.39	4.01	1.8	1.74	2	2	2.1988
Evorel	5.31E−08	272.39	4.01	1.8	1.74	2	2	2.1988
Fempatch	1.64E−07	272.39	4.01	1.8	1.74	2	2	2.1988
Menorest	3.93E−06	272.39	4.01	1.8	1.74	2	2	2.1988
Menostar	2E−07	272.39	4.01	1.8	1.74	2	2	2.1988
Oesclim	2.8E−07	272.39	4.01	1.8	1.74	2	2	2.1988
Systen	2.73E−07	272.39	4.01	1.8	1.74	2	2	2.1988
Tradelia	2.4E−07	272.39	4.01	1.8	1.74	2	2	2.1988
Vivelle	2.47E−07	272.39	4.01	1.8	1.74	2	2	2.1988
Habitrol	1E−06	162.23	1.17	0.865	0.88	2	0	1.371
Nicoderm	8.81E−07	162.23	1.17	0.865	0.88	2	0	1.371
Nicolan	5.29E−07	162.23	1.17	0.865	0.88	2	0	1.371
Nicorette	1.24E−06	162.23	1.17	0.865	0.88	2	0	1.371
Nicotine-Alza	1.04E−06	162.23	1.17	0.865	0.88	2	0	1.371
Nicotinell	1.5E−06	162.23	1.17	0.865	0.88	2	0	1.371
Nicotine-Novartis	8.38E−07	162.23	1.17	0.865	0.88	2	0	1.371
Nicotine-Pharmacia Upjohn	7.93E−07	162.23	1.17	0.865	0.88	2	0	1.371
Nitro disc	1E−07	227.11	1.62	0.494	2.04	9	0	1.23
Nitroderm	1.06E−08	227.11	1.62	0.494	2.04	9	0	1.23
Nitro-Dur	1.04E−08	227.11	1.62	0.494	2.04	9	0	1.23
Nitro-Dur 1	3.98E−08	227.11	1.62	0.494	2.04	9	0	1.23
Nitro-Dur2	6.71E−08	227.11	1.62	0.494	2.04	9	0	1.23
Minitran	1.13E−08	227.11	1.62	0.494	2.04	9	0	1.23
NG-Lavipharm	5.27E−08	227.11	1.62	0.494	2.04	9	0	1.23
Transiderm-Nitro	6.43E−05	227.11	1.62	0.494	2.04	9	0	1.23
Adesitrin	1.08E−08	227.11	1.62	0.494	2.04	9	0	1.23
Deponit	5.31E−08	227.11	1.62	0.494	2.04	9	0	1.23

[a,b,e] Abraham's descriptors are cited data of Abraham and Martins (2004).
[a] Excess molar refractivity ($cm^3\ mol^{-1}$)/10.
[b] Dipolarity/polarizability.
[c,d] Number of hydrogen bond acceptor and donor groups on the molecules (taken from PubChem database: www.ncbi.nlm.nih.gov).
[e] McGown characteristic volume ($cm^3\ mol^{-1}$)/100.