Development of sensitive HPLC method with fluorescence detection for determination of memantine and its application to pharmacokinetic study A thesis Presented by

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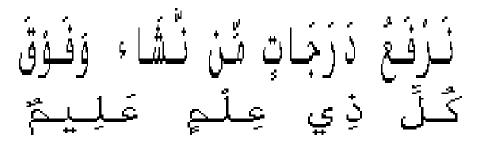
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Yûsuf - Joseph

پِسُمِ اللهِ الرَّحْمنِ الرَّحِيمِ In the Name of Allâh, the Most Beneficent, the Most Merciful.



We raise to degrees whom We please, but over all those endowed with knowledge is the All-Knowing (Allâh).

حَدَقَ الله العظيم

76 verse from

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- 1- Mohamed G. Hassan, Kamla M. Emara, Horria A. Mohamed, Hanaa M. Abdel-Wadood, Rie Ikeda, Mitsuhiro Wada, Naotaka Kuroda and Kenichiro Nakashima: Determination of memantine in rat plasma by HPLC-fluorescence method and its application to study of the pharmacokinetic interaction between memantine and methazolamide. Biomedical Chromatography; 26 (2012), 214-219.
- 2- Mohamed G. Hassan, Rie Ikeda, Mitsuhiro Wada, Naotaka Kuroda, Hanaa M. Abdel-Wadood, Horria A. Mohamed and Kenichiro Nakashima: Interaction study of acetylcholinestrase inhibitors on pharmacokinetics of memantine in rat plasma by HPLC-fluorescence method. Biomedical Chromatography; 27 (2013), 1685-1689.

List of abbreviations

AChE Acetylcholinestrase

AD Alzheimer's disease

ASC Anthraquinone sulfonyl chloride

AUC Area under curve for concentration versus time

CAI Carbonic anhydrase inhibitor

CL Clearance

C_{max} The peak concentration

Conc. Concentration

CYP450 Cytochrome P450 isoenzymes

DIB-CI 4-(4,5-diphenyl-1*H*-imidazol-2-yl)benzoyl chloride

DMF Dimethylformamide

DP Donepezil

EDTA Ethylenediamine tetra-acetic acid

EMEA European Medicines Agency

FAB-MS Fast atom bombardment mass spectrometer

FDA Food and Drug Administration

FL Fluorescence

FLX Flouxetine

Fmol Femtomole

FMOC 9-fluorenylmethyl chloroformate

GAL Galantamine

HPLC High Performance Liquid Chromatography

Inj. Injection

i.p. Intraperitoneal

IS Internal standard

i.v. Intravenous

IUPAC International Union of Pure and Applied Chemistry

LIF Laser induced fluorescence

MEKC Micellar electrokinetic chromatography

MRT Mean resident time

MT Memantine (1-amino-3,5-dimethyladamantane)

MZA Methazolamide

NAC (2-naphthoxy)acetyl chloride.

NBD-CI 4-Chloro-7-nitro-2,1,3-benzoxadiazole

nAChRs Nicotinic acetylcholine receptors

NMDA *N*-methyl-D- aspartate.

OPA *o*-phthaldialdehyde

RFI Relative fluorescence intensity

RIV Rivastigmine

SPE Solid phase extraction

THF Tetrahydrofuran

E Molar absorbitivity

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