

Separation of Selected Imidazole Enantiomers Using Dual Cyclodextrin System in Micellar Electrokinetic Chromatography

Publons ID	14281000
Wos ID	WOS:000319665500003
Doi	10.1002/chir.22156
Title	Separation of Selected Imidazole Enantiomers Using Dual Cyclodextrin System in Micellar Electrokinetic Chromatography
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Publish Date	JUN 2013
Journal Name	CHIRALITY
Citation	22
Abstract	<p>Cyclodextrin-modified micellar electrokinetic chromatography (CD-MEKC) method was developed for simultaneous enantioseparation of three imidazole drugs namely tioconazole, isoconazole and fenticonazole. Three easily available and inexpensive cyclodextrins namely 2-hydroxypropyl--cyclodextrin (HP--CD), 2-hydroxypropyl--cyclodextrin (HP--CD) and heptakis(2,6-di-O-methyl)--cyclodextrin (DM--CD) were evaluated to discriminate the six stereoisomers of the drugs. However, none of the three CDs gave a complete enantioseparation of the drugs. Effective enantioseparation of tioconazole, isoconazole and fenticonazole was achieved using a combination of 35mM HP--CD and 10mM DM--CD as chiral selectors. The best separation using both HP--CD and DM--CD (35mM:10mM) as chiral selectors were accomplished in background electrolyte (BGE) containing 35mM phosphate buffer (pH7.0), 50mM sodium dodecyl sulfate (SDS) and 15% (v/v) acetonitrile at 27kV and 30 degrees C with all peaks resolved in less than 15min with resolutions, R_s 1.90-27.22 and peak efficiencies, $N > 180\ 000$. The developed method was linear over the concentration range of 25-200mg l⁻¹ ($r^2 > 0.998$) and the detection limits ($S/N=3$) of the three imidazole drugs were found to be 2.7-7.7mg l⁻¹. The CD-MEKC method was successfully applied to the determination of the three imidazole drugs in spiked human urine sample and commercial cream formulation of tioconazole and isoconazole with good recovery (93.6-106.2%) and good RSDs ranging from 2.30-6.8%. Chirality 25:328-335, 2013. (c) 2013 Wiley Periodicals, Inc.</p>
Publish Type	Journal
Publish Year	2013
Page Begin	328
Page End	335
Issn	0899-0042
Eissn	
Url	https://www.webofscience.com/wos/woscc/full-record/WOS:000319665500003
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