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Hitachi - Immulite

(- TDx - HPLC)

HPLC

HPLC

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Study of Assay Methods of Phenytoin

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Abstract

Most epileptic patients undergo treatment with the anticonvulsive drugs, the most important of which is phenytoin. The treatment may last for their life time. So it should be insured to get the right therapeutic dose to reach and keep the optimal phenytoin concentration in the circulating body fluid ($10 - 20$ ug/ml). Although this patient should be under control in order to avoid liver damage or the incidence of toxicity of over dose of phenytoin (as a result of long term treatment).

It was vital to specify the phenytoin concentration in circulation, in order for the doctor to control the dose.

To achieve this we studied the assay methods of phenytoin (Hitachi, Immulite, TDx, and HPLC) and compared the results of these methods with each other. The results showed a very good correlation. This enabled us to use any of these methods for phenytoin determination in the patient's blood stream. HPLC method could be considered the method of choice in the drug quality control because of its plentiful specimens and low costs.

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[]status

Indroduction :

.epilepticus

Epilepsy

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: Phenytoin

[]

Epanutin Dilantin :

motor cortex []

aura

attack

postictal period

HPLC

: []

partial seizures

: - []

- - psychomotor epilepsy

Reagents & chemicals

generalised seizures

[]

(

High Performanc Liquid HPLC

[] (tonic-clonic

: Chromatography

grand mal

HPLC grade MeoH -

)

.Merk H O:

[](Absence

[]

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Fluorescence

myoclonus

petit Mal

alkaline phosphatase -

Polarization Immuno assay TDx

.buffer Abbot

Chemiluminescent - : (No.)

Adamantyl dioxetane) Substrate) (S) -

.(phosphate

-(monoclonal

(T) -

*

Hitachi pretreatment solution (P) -

No.) < > Roche . surfactant -

: CEDIA)

R¹ (EA) - .phenytoin standard calibration

) phenytoin -

monoclonal mouse H / , -) controls

(antibody (L - M - *

enzyme

.acceptor microbial

N--)- Chemiluminescence

morpholino) propanesulfonic : < > Immulite

/ , (acid (MOPS Phenytoin Test Unit -

.R¹ bead

R² (ED) -)

enzyme donor (monoclonal)

	grade (H O)		(microbial
	-	phenytoin controls	-
	/	L-H	:
	-	(/ ,)	
	psi	-	-
	TDxFLx	* Instruments &	chromatographic conditions
Fluorescence	Polarization		*
	Immuno assay		HPLC
	.Abbott	High Performance Liquid	Chromatography
	Immulite	* Jassco	JCL -
	. Chemiluminescence		
	:		-
		.gradient	
		stationary	-
	Test Unit	(x)	phase
)	guard	waters
	.(. column	
		.waters	-
		sep-pak plus	-
		(cartridge C	(waters
		:	
		HPLC (MeoH	-

*

Fluorescence **Polarization** **Hitachi** *

Immuno assay

 :

 () . (B/Mhitachi)

 () Methods - -

 High **HPLC** *

 polarized light Performance Liquid

 () Chromatography

 reagent : matrix

 /

 surface active agents detector

)

*

(

o -

Chemiluminescence

:

chemiluminescence

HPLC

, Immulite , TDx

.Hitachi

Alkaline phosphatase +
Adamantyl dioxetane phosphate
= Continuing Luminescence
*

procedure Extraction

Hitachi

liquid-

liquid extraction

recombinant DNA

MeoH

) : H O:

galactosidase - β
(bacterial enzyme)

.(

(

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(

N ,

Blood

spectrophotometr

Samples

N ,

.HPLC

:

(V:V; :)

HPLC

Wave Length Specificity :

HPLC

(spectrophotometer

)

solid-

()

phase extraction

.cartridge[]

()

Repeatability

C

RSD= ,

(reversed phase)

.()

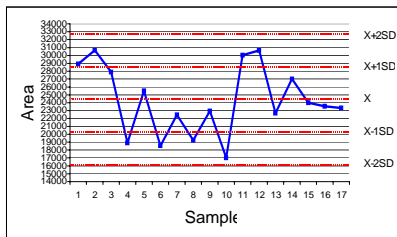
Injection No	Peak area of Std.Sol.
1	1244237
2	1235452
3	1210014
4	1214671
5	1243341
6	1216073
Mean	1227298
SD	15459.45
RSD	1.26

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()

:

()



()

HPLC

R = ,

Mean

.SD ±

)

%)

%)

.()

()

:)
 T % (
 r % ()
 p< , ()
 [] HPLC-TDx - .()
 r = ,
 .()
 Immulite HPLC - ()
 r = , ()
 () ()
 Hitachi HPLC -
 r = ,
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()

) HPLC

(

HPLC

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HPLC

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HPLC

HPLC

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