Cat. No 4-530

DIAGNOSTIC KIT FOR DETERMINATION OF PHENOBARBITAL CONCETRATION

HC-PHENOBARBITAL

INTRODUCTION

Phenobarbital is an anticonvulsant used in generalized tonic - clonic and partial seizures. It has sedative and sleep-inducing properties, it also reduces smooth muscles tension. Phenobarbital is a derivative of barbituric acid. It potentiates the inhibitory effect of neurotransmiter GABA, in high doses works like GABA analogue. Phenobarbital is excreted unchanged with the urine - about 25% and also is metabolized in the liver (the remaining amount) to *p*-hydroxyphenobarbital, which is largely excreted as glucuronide or sulfate ester. Phenobarbital concentration in serum depends on its absorption and metabolism, disease state, concomitant treatment. Monitoring phenobarbital concentration helps to establish the most effective and safest individual dosage.

METHOD PRINCIPLE

Immunoturbidimetric method; inhibition of agglutination.
Increase of absorbance measured at λ = 700 nm is inversely proportional to the concentration of phenobarbital in the sample.
Phenobarbital which is present in the sample forms immune complexes with specific antibody contained in the first reagent. After adding a second reagent containing polistyrene latex particles coated with phenobarbital, agglutination is inhibited in proportion to phenobarbital concentration in the sample.

REAGENTS

Package

1-Reagent	1 x 16 ml
2-Reagent	1 x 8.5 ml

Unopened reagents stored at 2-8°C are stable up to the expiry date printed on the package. After opening the reagents are stable for 21 days on board the analyser at 2-10°C. Protect from light!

Reagents composition

Bis-Tris buffer, monoclonal antibodies to phenobarbital, polistyrene latex particles coated with phenobarbital, sodium azide (< 0.1%).

Warnings and notes

- Products for in vitro diagnostic use only.
- The reagents should be used by suitably qualified laboratory personnel only in accordance with intended purpose.
- The reagents contain sodium azide as a preservative (< 0.1%). Avoid contact with skin and mucous membranes.Sodium azide can form high explosive metal azide combinations with lead and cooper. Drains should be flushed well with a large amount of water when discarding the solution.
- Mix well Reagent 2 before first use. Avoid foam formation.
- For optimal reagents stability it is recommended to remove them from the system and store in tightly closed bottles at 2-8°C.

SPECIMEN

Serum. Samples may be stored up to 3 days at 2-8 °C. or longer at -20°C. Nevertheless it is recommended to perform the assay with freshly collected samples!
Avoid repeated freezing and thawing. Mix well the samples before analysis.

PROCEDURE

These reagents may be used in automatic analyser Hitachi 911/912.

1-Reagent and 2-Reagent are ready to use.
1-Reagent Read code by barcode-reader
2-Reagent Read code by barcode-reader

Wavelength:

Main	700 nm

THERAPEUTIC RANGE

therapeutic concentration	15-40 µg/ml (65-172 µmol/l)

Some patients achieve the desired therapeutic response at levels outside this range, so it is recommended to consider the need to establish an individual therapeutic ranges for each patient.

QUALITY CONTROL

For internal quality control it is recommended to use the CORMAY TDM CONTROLS (Cat. No 5-107) with each batch of samples. For the calibration of automatic analysers systems the CORMAY PHENOBARBITAL CALIBRATORS (Cat. No 5-111) is recommended.
The calibration curve should be prepared every 7 days, with change of reagent lot number or as required e.g. quality control findings outside the specified range.

PERFORMANCE CHARACTERISTICS

Metrological characteristics may differ from values presented below with the instrument used.

- **Sensitivity / Limit of Detection:** 0.43 µg/ml (1.85 µmol/l).

- **Linearity:** up to 80 µg/ml (344.8 µmol/l). If the phenobarbital concentration exceeds 80 µg/ml, dilute the sample 1:8 with saline solution and repeat the assay. The dilution take into account when making the results.

- **Specificity / Interferences**

Haemoglobin up to 9 g/dl, bilirubin up to 44 mg/dl, fatty acids up to 3 g/dl, do not interfere with the test.

- **Precision**

Repeatability (run to run) n = 10	Mean [µg/ml]	SD [µg/ml]	CV [%]
level 1	8.77	0.28	3.23
level 2	23.68	0.83	3.51
level 3	47.24	2.32	4.92

Reproducibility (day to day) n = 10	Mean [µg/ml]	SD [µg/ml]	CV [%]
level 1	8.42	0.46	5.47
level 2	23.51	0.71	3.00
level 3	48.65	2.03	4.17

- **Method comparison**

A comparison between CORMAY reagent (y) and commercially available assay (x) using 26 samples gave following results:
y = 1.066x + 0.41 µg/ml;
R = 0.9927 (R – correlation coefficient)

WASTE MANAGEMENT

Please refer to local legal requirements.

LITERATURE

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