

# SODIUM

Enzymatic Kinetic Colorimetric Determination  
of Sodium  
in Serum and in Plasma

4 x 15 ml + 2 x 10 ml

**REF** CY10-80

Additional kit:

2 x 5 x 1 ml **SODIUM STANDARD**

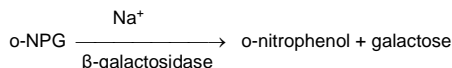
**REF** 7504

Aqueous standard with two concentrations (high and low)

## PRINCIPLE

The assay is based on the activation of  $\beta$ -galactosidase enzyme by the sodium present in the sample and the consequent enzymatic transformation of o-nitrophenyl- $\beta$ -D-galactopyranoside (o-NPG) into o-nitrophenol and galactose.

The o-nitrophenol formed is kinetically measured at 405 nm, as shown in the following reaction scheme:



## REAGENTS

Kit components:

	<b>REF</b> CY10-80	Quantity
<b>REAGENT 1/A</b>	<b>CY10-80R1</b>	<b>2x30 ml</b>
Buffer pH 8.90		
<b>REAGENT 1/B</b> (Iyo blue cap)	<b>CY10-80R2</b>	<b>4 vials</b>
$\beta$ -galactosidase		
<b>REAGENT 2/A</b>	<b>CY10-80R3</b>	<b>1x20 ml</b>
Buffer pH 6.20		
<b>REAGENT 2/B</b> (Iyo white cap)	<b>CY10-80R4</b>	<b>2 vials</b>
o-NPG		

STABILITY: stored at 2-8°C, reagents are stable up to the expiration date on the label.

## PREPARATION OF WORKING REAGENTS

Let reagents reach room temperature before the reconstitution.

### REAGENT 1 (R1/A + R1/B)

Reconstitute the contents of a vial of Reagent 1/B with exactly 15 ml Reagent 1/A. Shake gently until complete dissolution, avoiding any foam.

Wait 5 minutes before use.

STABILITY: 2 weeks at 2-8°C.

### REAGENT 2 (R2/A + R2/B)

Reconstitute the contents of a vial of Reagent 2/B with exactly 10 ml of Reagent 2/A. Shake gently until complete dissolution, avoiding any foam.

Wait 5 minutes before use.

STABILITY: 4 weeks at 2-8°C.

## SODIUM STANDARD (not included in the kit)

The Sodium standard (**REF** 7204) kit is made by two aqueous standards:

- low standard (concentration of sodium: 120 mmol/L)

- high standard (concentration of sodium: 160 mmol/L)

Each laboratory should choose to use low, high or both level standards according to its own needs and experience.

## SAMPLE

Serum, plasma with lithium-heparin.

Warning: do not use sodium-EDTA. as anticoagulant.

## MANUAL ASSAY PROCEDURE

Wavelength:	405 nm
Optical path:	1 cm
Temperature:	37°C
Linearity:	from 80 mmol/L to 180 mmol/L
Sample/ Reagent 1/ Reagent 2:	1/30/10
Reaction:	Kinetic

Let reagents reach working temperature before use.

Pipette into microcuvettes labeled as it follows:

B/R: blank reagent, S: sample and STD: standard:

	B/R	S	STD
Distilled water	0.025 ml	=	=
Sample	=	0.025 ml	=
Standard	=	=	0.025 ml
Reagent 1	0.75 ml	0.75 ml	0.75 ml
Reagent 2	0.25 ml	0.25 ml	0.25 ml

Mix accurately, incubate at 37°C for 2 minutes. Read the initial absorbance at 405 nm against distilled water and start timer simultaneously. Read again after 1 and 2 minutes. Calculate the average of  $\Delta A/\text{min}$  found for the blank reagent, the sample and the standard.

## CALCULATION

Using only one standard (low or high)

$$\text{sodium (mmol/L)} = \frac{\Delta A / \text{min (S)} - \Delta A / \text{min (B/R)}}{\Delta A / \text{min (ST)} - \Delta A / \text{min (B/R)}} \times [\text{STD}]$$

$$\Delta A / \text{min (ST)} - \Delta A / \text{min (B/R)}$$

where [STD]= concentration of sodium in mmol/L of the standard used in the test.

Using both standards (low and high)

Using the two standards, draw a calibration line and calculate the sodium concentration in the sample.

Conversion values: mmol/L = mEq/L

$$\text{mg/dl} = \text{mmol/L} \times 2.3$$

## REFERENCE VALUES

Serum / plasma: 135 - 150 mmol/L (311 - 345 mg/dl)

## PERFORMANCE CHARACTERISTICS

Linearity: between 80 and 180 mmol/L (184 - 414 mg/dl).

For values higher than 180 mmol/L, dilute the sample with the same volume of distilled water and multiply the result by 2.

Within-run precision:

Average (mmol/L)	Level 1	Level 2
DS	120	160
CV%	2.48	4.59
	2.06	2.86

Between-run precision:

Average (mmol/L)	Level 1	Level 2
DS	123	155
CV%	4.8	7.31
	3.90	4.72

Interferences:

Up to 2500 mg/dl of tryglicerides does not interfere. Up to 27 mg/dl of bilirubin does not interfere.

Correlation with flame photometry:

FAR kit for sodium determination shows a correlation coefficient equal to 0.985, in comparison to flame photometry.

## NOTES

- (\*) dangerous reagent are marked with an asterisk. Refer to safety data sheet.
- Use only sodium, potassium and calcium ions free distilled water.
- Use perfectly clean laboratory material (tips, glassware).
- In case sodium is defined together with potassium, sodium must be determined directly before potassium (bichannel method).
- Reaction volumes can be proportionally changed.
- Perform the measure of the standard for each sample series.
- Chemistry analyzer parameters are available.

## DISPOSAL

The product must be used for professional analysis only. The product must be disposed of according to national/international laws.

## WARNINGS AND PRECAUTIONS

The reagents may contain non-reactive components and various preservatives. Contact with the skin and ingestion should be avoided. Use the normal precautions expected with correct behaviour in laboratory.

## REFERENCES

Available on request.

## MANUFACTURER

FAR








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## KEY SYMBOLS

	In Vitro diagnostic medical device
	batch number
	catalogue number
	temperature limits
	use by
	caution
	consult accompanying documents