Natrium Microplate Assay Kit

Cat #: orb390815 (manual)

Detection and Quantification of Natrium (Na^+) Content in Serum, Urine, Saliva and Other biological fluids Samples.

For research use only. Not for diagnostic or therapeutic procedures.

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INTRODUCTION

Sodium (Na^+) is one of the most important electrolytes along with chloride, calcium and potassium. Na plays vital roles in the maintenance of plasma volume, pH balance, transmission of nerve impulses, and normal cell functions. Healthy individuals can absorb sodium ingested in food, and kidneys maintain proper sodium balance by excreting its excess in urine. Sodium sources include table salt, milk, meat, shellfish, bread, snack food, etc. Normal Sodium intake has been defined to be between 200-500 mg/day. Patients suffering high blood pressure, hypertension, chronic kidney disease, and people suffering salt sensitivity require restricted low-sodium diets due to those conditions. Hyponatremia (low sodium concentration in blood) can occur in patients with nephrotic syndrome, excessive vomiting and diarrhea, while Hypernatremia (high sodium concentration in blood) is developed in patients suffering from liver diseases, burns, and pregnancy.

The reaction products can be measured at a colorimetric read out at 420 nm.

KIT COMPONENTS

Component	Volume	Storage
96-Well Microplate	1 plate	
Diluent	30 ml x 1	4 °C
Enzyme	Powder x 1	4 °C
Substrate	Powder x 1	4 °C
Standard (200 mmol/L)	Powder x 1	4 °C
Technical Manual	1 Manual	

Note:

Enzyme: add 1 ml Diluent to dissolve before use, store at -80 °C for 1 month.

Substrate: add 1 ml Diluent to dissolve before use, store at -20 °C for 1 month.

Standard: add 1 ml distilled water to dissolve before use, store at 4 °C for 1 month.

MATERIALS REQUIRED BUT NOT PROVIDED

1. Microplate reader to read absorbance at 405 nm
2. Distilled water
3. Pipettor, multi-channel pipettor
4. Pipette tips
5. Mortar
6. Centrifuge
7. Timer

SAMPLE PREPARATION

1. For serum and other liquid samples

Detect directly.

2. For tissue samples

Weigh 0.1 g tissue, homogenize with 1 ml distilled water, centrifuged at 10000g for 20 minutes, take the supernatant into a new centrifuge tube for detection.

ASSAY PROCEDURE

Add following reagents into the microcentrifuge tube:

Reagent	Sample	Standard	Blank
Diluent	170 µl	170 µl	170 µl
Sample	10 µl	--	--
Standard	--	10 µl	--
Sample	--	--	10 µl
Substrate	10 µl	10 µl	10 µl
Enzyme	10 µl	10 µl	10 µl
Mix, incubate at RT for 10 mins, record absorbance measured at 405 nm.			

Note:

1) Perform 2-fold serial dilutions of the top standards to make the standard curve.

2) The concentrations can vary over a wide range depending on the different samples. For unknown samples, we recommend doing a pilot experiment & testing several doses to ensure the readings are within the standard curve range.

CALCULATION

1. According to the serum sample

Na^+ (mmol/L) = $C_{Standard}$ × (OD_{Sample} - OD_{Blank}) / ($OD_{Standard}$ - OD_{Blank}) × 10

= 150 × (OD_{Sample} - OD_{Blank}) / ($OD_{Standard}$ - OD_{Blank})

$C_{Standard}$: the concentration of Standard, 15 mmol/L.

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