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## Determination of microglucosuria

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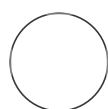
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### ABSTRACT

This protocol describes how to determine microglucosuria in patients living with sickle cell disease in order to diagnose a nephropathy as a result of proximal convoluted tubule damaged by heme catabolites.

### MATERIALS

Spectrophotometer

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We use this protocol and it's working

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## DETERMINATION OF MICROGLUCOSURIA

### 1 . OBJECTIVE

The aim is to describe how microglucosuria is determined.

### 2 SAMPLING

#### Urine

A meadstream voiding urine sample at random at any time between 8 a.m. and 2 p.m. is collected. The urine sample is centrifuged before performing the test on the same day of collection with the undiluted supernatant.

### 3 PRINCIPLE

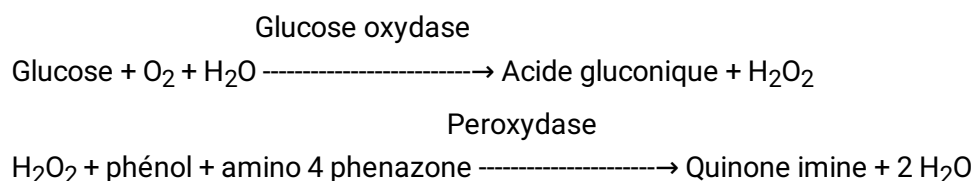
Several methods can be used, including hexokinase, glucose oxidase or glucose dehydrogenase.

The method used in this work is that of glucose oxidase / peroxidase whose principle is as follows:

Glucose, under the action of glucose-oxidase, is oxidized to gluconic acid with formation of hydrogen peroxide.

In the presence of peroxidase, the hydrogen peroxide produced transforms a colorless reduced chromogen into an oxidized chromogen colored pink whose intensity of coloration measurable by spectrophotometry at 505 nm is proportional to the glucose concentration of

the sample.



## 4 PROCEDURE

- Place the reagents at room temperature for 5 minutes.
- Pipette in test tubes according to the following table:

	Blanc	Standard	Control	Sample
Blanc	-	-	-	-
Standard	-	10 µl	-	-
Control	-	-	10 µl	-
Sample	-	-	-	10 µl
Reagent	1 ml	1 ml	1 ml	1 ml

- Shake well and incubate the tubes for 10 minutes at room temperature or for 5 minutes 37°C.
- A pink coloration is obtained (stable at least 1 hour).
- Read the concentrations by spectrophotometer at 505 nm.

## 5 RESULTS

The urine of a healthy subject does not contain glucose.


## 6 INTERPRETATION

To interpret glucosuria, the RGCU (urinary glucose/creatinine ratio) which is the ratio of glucosuria (mg/l) to creatininuria (g/l) is first calculated.

If  $\text{RGCU} < 20 \text{ mg/g}$ , it is called physiological glucosuria.

**If the  $\text{RGCU} \geq 20 \text{ mg/g}$ , with test strip results indicating an absence of glucose in the urine, it is called microglucosuria.**

If  $\text{RGCU} \geq 20 \text{ mg/g}$  with test strip results indicating the presence of glucose in the urine, this is



called glucosuria.