

# Manual procedure

<b>Cat. No. 13831</b>	R1	1 x	45 ml
<b>For 30 tests</b>	R2	4 Powder for	11 ml
<b>Cat. No. 13832</b>	R1	1 x	100 ml
<b>For 66 tests</b>	R2	5 Powder for	20 ml

## D-Xylose

Colorimetric test, Phloroglucinol method

### Powder Reagents

#### Test Principle

The pentoses form, by reaction with phloroglucinol in an acid medium, a complex that can be determined by spectrophotometry.

#### Concentrations in the test

<b>Reagent R1</b>		
Acetic acid	18	mmol/L
HCl Conc.	5	mol/L
<b>Reagent R2</b>		
Phloroglucinol	36	mmol/L
<b>Standard</b> : The concentration is indicated on the vial.		

#### Stability and preparation of working reagent

**Reagent R1:** liquid.

**Reagent R2:** powder.

**Standard** : liquid, ready to use. For serum D-Xylose assay.

All reagents and standard are stable up to expiry date given on the label when stored at +20 → +25°C.

#### Working Reagent:

Add 11 ml of bottle R1 into bottle R2 and mix gently until complete dissolution.

The solution is stable for 5 days at 2 - 8°C in the darkness.

#### D-Xylose dosage:

**Adults:** 25 g of xylose dissolved in approximately 250 ml water.

**Children:** 0.5 g xylose / kg (up to 25 g) as a 5 % water solution .

Patient should drink approximately 250 ml of water during the period of xylose administration and blood sample collection.

#### Specimen collection and handling

1. Serum before the dose, for sample blank.
2. Keep the patient resting during the period of sample collection.
3. A single blood specimen is usually taken 2 hours after the dose, although a blood sample at 1 hour increases diagnostic discrimination in children.
4. Don't use hemolyzed sample.
5. All urine passed during the 5 hours after ingestion is collected.
6. 5-hours collected urine: Measure the urine volume with no additives: (e.g. thymol, isopropanol). Centrifuge and dilute urine sample 1/100. (10 µl urine + 990 µl distilled water).
7. Stability : In Serum & urine : 24 hours at 4 °C, Samples are stable for several weeks at - 20 °C.

#### Standard

D-Xylose STD. Cat. No. 16241

#### Quality control

MED-Xylose N Cat. No. 15261

MED-Xylose P Cat. No. 15271

#### Procedure

Wavelength	Hg 546 nm ( 530 - 580 nm)
Spectrophotometer	555 nm
Cuvette	1 cm light path
Temperature	100 °C
Measurement	against reagent blank
Reaction	end point

#### Assay

	Blank	Sample blank	Sample	Standard
Working reagent	1500 µl	1500 µl	1500 µl	1500 µl
Distilled water	10 µl	--	--	--
Sample before the dose	--	10 µl	--	--
Sample after the dose	--	--	10 µl	--
Standard	--	--	--	10 µl

Mix, incubate for exactly 4 min. at 100°C, (boiling water bath). Cool under tap water and read absorbance (A) against reagent blank.  $\Delta A_{\text{Sample}} = A_{\text{Sample}} - A_{\text{Sample blank}}$

#### Calculations

$$\text{Serum: Conc. D-Xylose (mg/dl)} = \frac{\Delta A_{\text{Serum sample}}}{A_{\text{Standard}}} \times \text{Con. Standard (mg/dl)}$$

$$\text{Urine: Conc. D-Xylose (mg/dL)} = \frac{\Delta A_{\text{Urine sample diluted}}}{A_{\text{Standard}}} \times \text{Con. Standard (mg/dL)} \times F$$

F= Dilution urine factor

F=100 ( if your dilution ratio 10 µl urine + 990 µl distilled water )

$$\text{mg/dl} \xleftrightarrow[100 \times]{\times 0.01} \text{g/L}$$

#### 5hrs. Urine collection:

$$\text{Excreted xylose} = \text{Urine volume (L)} \times \text{Conc. D-Xylose Urine (g/L)}$$

$$\text{Excreted xylose \%} = \frac{\text{Excreted xylose (g)}}{\text{xylose dose (g)}} \times 100$$

#### Converted units factor:

$$\text{mg/dl} \xleftrightarrow[15 \times]{\times 0.0666} \text{mmol/L}$$

## Linearity

0.5 - 150 mg/dl .

At higher concentrations dilute sample (1+1) with sodium chloride solution (0.9 %) and multiply the result by 2.

## Precaution

This reagent contains hydrochloric acid, which is irritating to the eyes and skin. If solution comes into contact with skin, eyes or mucous membranes, flush immediately with large quantities of water.

## Reference range

### Children

	Conventional Units	SI Units
Serum (1 hrs.)		
< 6 mth.	> 15 mg/dL	> 1.00 mmol/L
> 6 mth.	30 – 50 mg/dL	2.00 – 3.33 mmol/L
Serum (2 hrs.)		
< 6 mth.	30 – 40 mg/dL	2.00 – 2.66 mmol/L
Urine (5 hrs.)		
< 6 mth.	11 – 30 % excreted xylose	
6 – 12 mth.	20 – 32 % excreted xylose	
1 – 3 yr.	20 – 42 % excreted xylose	
3 – 10 yr.	25 – 45 % excreted xylose	
> 10 yr.	25 – 50 % excreted xylose	

### Adults

	Conventional Units	SI Units
Serum (2 hrs.)	> 33 mg/dL	> 2.20 mmol/L
Urine (5 hrs.)	> 16 % excreted xylose	

These ranges are given for orientation only, each laboratory should establish its own reference range.

## References

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