

Comenius University in Bratislava, Faculty of Medicine
Institute of Medical Chemistry, Biochemistry and Clinical Biochemistry

LABORATORY PROTOCOL SS05

Determination of iron in blood serum, absorption curve of iron

Name, group:	Date:
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Absorption curve of iron is made for differential diagnosis of iron deficit. Peroral administration of iron in case of its unchanged absorption leads to increase of iron in the blood. When there are defects in absorption of iron, its level in the blood stays unchanged or changes just a little.

Principle:

Before examination we take blood sample to determine basic level of iron. The patient then receives 200 mg of iron in the form of pill. Blood is then taken after 2, 4 and 6 hours after administration of iron and its serum concentration is determined using reagent that forms stable red complex with iron (Fe^{2+}) cations.

Procedure:

	S ₁₀	S ₁₂	S ₁₄	S ₁₆	S ₂₀	S ₂₂	S ₂₄	S ₂₆	standard	ref.
deprot. serum (ml)	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	---	---
standard (ml)	---	---	---	---	---	---	---	---	1,0	---
water (ml)	---	---	---	---	---	---	---	---	---	1,0
reagent (ml)	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0

We let the samples stand for 10 minutes and measure absorbance at 535 nm.

Calculation:

	Patient 1				Patient 2				
	S ₁₀	S ₁₂	S ₁₄	S ₁₆	S ₂₀	S ₂₂	S ₂₄	S ₂₆	standard
<u>absorbance</u>									
<u>Fe²⁺ (μmol/l)</u>									17,9

Reference values

Newborns		19,7 – 48,3 μmol/l
Children	4 – 6 months	3,6 – 28 μmol/l
	6 months – 3 years	10,6 – 31,3 μmol/l
	3 – 12 years	9,0 – 26,9 μmol/l
Adults	men	10,5 – 28 μmol/l
	women	9,0 – 25,9 μmol/l

Absorption curve is physiological, if at least one sample contains **more than 28 μmol/l** of iron.

Conclusion:

Next week:

- autonomous nervous system – neurotransmitters, receptors