

ALKALINE PHOSPHATASE (ALP)

Continuous-spectrophotometric
AMP BUFFER (IFCC)

Instrument: HITACHI 912

Principle of the method

Alkaline phosphatase (ALP) catalyzes in alkaline medium the transfer of the phosphate group from 4-nitrophenylphosphate to 2-amino-2-methyl-1-propanol (AMP), liberating 4-nitrophenol. The catalytic concentration is determined from the rate of 4-nitrophenol formation, measured at 405 nm.

Samples

Serum, plasma.

Alkaline phosphatase in serum or plasma is stable for 7 days at 2-8°C.
Heparin may be used as anticoagulant

Reagent preparation

Working Reagent: Dissolve the powder of a Reagent B vial with 20 mL of the Reagent A bottle (if 10x20 mL size) or dissolve the contents of a Reagent B vial with the entire volume of a Reagent A bottle (if 5x100 mL size).
Stable for 2 months at 2-8°C.

Performance characteristics

- Linearity: up to 1200 U/L.
- Interferences: Fluoride, oxalate, citrate and EDTA as anticoagulants interfere. Hemolysis interferes due to the alkaline phosphatase content in red cells.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	ALP	Select Test:	ALP
Test Name:	ALP	Calibration Type:	Linear
Assay/Time/Point:	Rate A / 4 / 4 / 13	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water / 0	SD Limit:	0.1
Wavelength (Second./Main):	700 / 415	Duplicate Limit:	5 % / 50 Abs
Sample Volume (Normal):	5 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	3 / 0 / 0	S1 Abs. Range:	-32000 / 32000
(Increased):	10 / 0 / 0	OTHERS	
Reagent (R1) T1:	250 / 0 / ... / 60	Select Test:	ALP
(R2) T2:	0 / 0 / ... / 0	Calib. Code	Concentration
(R3) T3:	0 / 0 / ... / 0	(1) ...	0
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	25000 - Increase	(3)	...
Prozone Limit:	-32000 - Lower	(4)	...
RANGE		(5)	...
Select Test:	ALP	(6)	...
Report Name:	Alkaline Phosphatase	Sample volume	Diluted
Name:	ALP	(1) 5	0
Select Sample Type:	Ser/PI	(2) 5	0
Application Code:	...	(3)	
Unit:	U/L	(4)	
Data Mode:	On board	(5)	
Control Interval:	1000	(6)	
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0	* Assigned value	
Expected Ranges Male:	26 - 117	... Data entered by the operator	
Female:	26 - 117		
Repeat Range:	0 - 1200		
Technical Range:	0 - 1200		

ALANINE AMINOTRANSFERASE (ALT)

Continuous-spectrophotometric
IFCC

Instrument: HITACHI 912

Principle of the method

Alanine aminotransferase (ALT or GPT) catalyzes the transfer of the amino group from alanine to 2-oxoglutarate, forming pyruvate and glutamate. The catalytic concentration is determined from the rate of decrease of NADH, measured at 340 nm, by means of the lactate dehydrogenase (LDH) coupled reaction.

Samples

Serum.

Alanine aminotransferase in serum is stable for 7 days at 2-8°C.

Reagent preparation

Working Reagent: Pour the contents of the Reagent B into the Reagent A bottle. Mix gently.

Stable for 2 months at 2-8°C.

Performance characteristics

- Interferences: High pyruvate in the sample will consume NADH during the delay time before measurements, reducing the linearity of the method.
- Linearity: Up to 500 U/L.

Instrument settings

ANALYZE		CALIBRATION			
Select Test:	ALT	Select Test:	ALT		
Test Name:	ALT	Calibration Type:	Linear		
Assay/Time/Point:	Rate A / 5 / 8 / 15	Points/Span Point:	2 / 2		
Analyse cycle time:	10 sec.	Weigh:	0		
Diluent/Expiration:	Water/0	SD Limit:	0.1		
Wavelength (Second./Main):	700 / 340	Duplicate Limit:	10 % / 50 Abs		
Sample Volume (Normal):	12 / 0 / 0	Sensitivity Range:	-9999 / 9999		
(Decreased):	3 / 0 / 0	S1 Abs. Range:	-32000 / 32000		
(Increased):	20 / 0 / 0	OTHERS			
Reagent (R1) T1:	240 / 0 / ... / 60	Select Test:	ALT		
(R2) T2:	0 / 0 / ... / 0	<i>Calib. Code</i>	<i>Concentration</i>	<i>Position</i>	
(R3) T3:	0 / 0 / ... / 0	(1) ...	0	...	
(R4) T4:	0 / 0 / ... / 0	(2) ...	*	...	
Abs. Limit:	5500 - Decrease	(3)			
Prozone Limit:	-32000 - Lower	(4)			
RANGE		(5)			
Select Test:	ALT	(6)			
Report Name:	Alanine aminotransferase	<i>Sample volume</i>	<i>Diluted</i>	<i>Diluent</i>	
Name:	ALT	(1) 12	0	0	
Select Sample Type:	Ser/PI	(2) 12	0	0	
Application Code:	...	(3)			
Unit:	U/L	(4)			
Data Mode:	On board	(5)			
Control Interval:	1000	(6)			
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0	* Assigned value			
Expected Ranges Male:	0 - 41	... Data entered by the operator			
Female:	0 - 41				
Repeat Range:	0 - 500				
Technical Range:	0 - 500				

ALANINE AMINOTRANSFERASE (ALT)

Continuous-spectrophotometric
IFCC

Instrument: HITACHI 912

Principle of the method

Alanine aminotransferase (ALT or GPT) catalyzes the transfer of the amino group from alanine to 2-oxoglutarate, forming pyruvate and glutamate. The catalytic concentration is determined from the rate of decrease of NADH, measured at 340 nm, by means of the lactate dehydrogenase (LDH) coupled reaction.

Samples

Serum.

Alanine aminotransferase in serum is stable for 7 days at 2-8°C.

Reagent preparation

Reagent 1: Use the Reagent A.

Reagent 2: Use the Reagent B.

Performance characteristics

- Interferences: High pyruvate in the sample will consume NADH during the delay time before measurements, reducing the linearity of the method.
- Linearity: Up to 500 U/L.

Instrument settings

ANALYZE		CALIBRATION			
Select Test:	ALT	Select Test:	ALT		
Test Name:	ALT	Calibration Type:	Linear		
Assay/Time/Point:	Rate A / 10 / 8 / 17	Points/Span Point:	2 / 2		
Analyse cycle time:	10 sec.	Weigh:	0		
Diluent/Expiration:	Water/0	SD Limit:	0.1		
Wavelength (Second./Main):	700 / 340	Duplicate Limit:	10 % / 50 Abs		
Sample Volume (Normal):	15 / 0 / 0	Sensitivity Range:	-9999 / 9999		
(Decreased):	5 / 0 / 0	S1 Abs. Range:	-32000 / 32000		
(Increased):	20 / 0 / 0	OTHERS			
Reagent (R1) T1:	240 / 0 / ... / 60	Select Test:	ALT		
(R2) T2:	60 / 0 / ... / 60	<i>Calib. Code</i>	<i>Concentration</i>	<i>Position</i>	
(R3) T3:	0 / 0 / ... / 0	(1) ...	0	...	
(R4) T4:	0 / 0 / ... / 0	(2) ...	*	...	
Abs. Limit:	5000 - Decrease	(3)			
Prozone Limit:	-32000 - Lower	(4)			
RANGE		(5)			
Select Test:	ALT	(6)			
Report Name:	Alanine aminotransferase	<i>Sample volume</i>	<i>Diluted</i>	<i>Diluent</i>	
Name:	ALT	(1) 15	0	0	
Select Sample Type:	Ser/PI	(2) 15	0	0	
Application Code:	...	(3)			
Unit:	U/L	(4)			
Data Mode:	On board	(5)			
Control Interval:	1000	(6)			
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0	* Assigned value			
Expected Ranges Male:	0 - 41	... Data entered by the operator			
Female:	0 - 41				
Repeat Range:	0 - 500				
Technical Range:	0 - 500				

ASPARTATE AMINOTRANSFERASE (AST)

Continuous-spectrophotometric
IFCC

Instrument: **HITACHI 912**

Principle of the method

Aspartate aminotransferase (AST or GOT) catalyzes the transfer of the amino group from aspartate to 2-oxoglutarate, forming oxalacetate and glutamate. The catalytic concentration is determined from the rate of decrease of NADH, measured at 340 nm, by means of the malate dehydrogenase (MDH) coupled reaction.

Samples

Serum.

Aspartate aminotransferase in serum is stable for 7 days at 2-8°C.

Reagent preparation

Working Reagent: Pour the contents of the Reagent B into the Reagent A bottle. Mix gently.

Stable for 2 months at 2-8°C.

Performance characteristics

- Interferences: High pyruvate in the sample will consume NADH during the delay time before measurements, reducing the linearity of the method.
- Linearity: Up to 500 U/L.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	AST	Select Test:	AST
Test Name:	AST	Calibration Type:	Linear
Assay/Time/Point:	Rate A / 5 / 8 / 15	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water/0	SD Limit:	0.1
Wavelength (Second./Main):	700 / 340	Duplicate Limit:	10 % / 50 Abs
Sample Volume (Normal):	12 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	3 / 0 / 0	S1 Abs. Range:	-32000 / 32000
(Increased):	20 / 0 / 0	OTHERS	
Reagent (R1) T1:	240 / 0 / ... / 60	Select Test:	AST
(R2) T2:	0 / 0 / ... / 0	Calib. Code	Concentration
(R3) T3:	0 / 0 / ... / 0	(1) ...	0
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	5500 - Decrease	(3)	...
Prozone Limit:	-32000 - Lower	(4)	...
RANGE		(5)	...
Select Test:	AST	(6)	...
Report Name:	Aspartate aminotransferase	Sample volume	Diluted
Name:	AST	(1) 12	0
Select Sample Type:	Ser/PI	(2) 12	0
Application Code:	...	(3)	0
Unit:	U/L	(4)	0
Data Mode:	On board	(5)	0
Control Interval:	1000	(6)	0
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0	* Assigned value	
Expected Ranges Male:	0 - 42	... Data entered by the operator	
Female:	0 - 42		
Repeat Range:	0 - 500		
Technical Range:	0 - 500		

ASPARTATE AMINOTRANSFERASE (AST)

Continuous-spectrophotometric
IFCC

Instrument: HITACHI 912

Principle of the method

Aspartate aminotransferase (AST or GOT) catalyzes the transfer of the amino group from aspartate to 2-oxoglutarate, forming oxalacetate and glutamate. The catalytic concentration is determined from the rate of decrease of NADH, measured at 340 nm, by means of the malate dehydrogenase (MDH) coupled reaction.

Samples

Serum.
Aspartate aminotransferase in serum is stable for 7 days at 2-8°C.

Reagent preparation

Reagent 1: Use the Reagent A.
Reagent 2: Use the Reagent B.

Performance characteristics

- Interferences: High pyruvate in the sample will consume NADH during the delay time before measurements, reducing the linearity of the method.
- Linearity: Up to 500 U/L.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	AST	Select Test:	AST
Test Name:	AST	Calibration Type:	Linear
Assay/Time/Point:	Rate A / 10 / 8 / 17	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water/0	SD Limit:	0.1
Wavelength (Second./Main):	700 / 340	Duplicate Limit:	10 % / 50 Abs
Sample Volume (Normal):	15 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	5 / 0 / 0	S1 Abs. Range:	-32000 / 32000
(Increased):	20 / 0 / 0	OTHERS	
Reagent (R1) T1:	240 / 0 / ... / 60	Select Test:	AST
(R2) T2:	60 / 0 / ... / 60	<i>Calib. Code</i>	<i>Concentration</i>
(R3) T3:	0 / 0 / ... / 0	(1) ...	0
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	5500 - Decrease	(3)	...
Prozone Limit:	-32000 - Lower	(4)	...
RANGE		(5)	
Select Test:	AST	(6)	
Report Name:	Aspartate aminotransferase	<i>Sample volume</i>	<i>Diluted</i>
Name:	AST	(1) 15	0
Select Sample Type:	Ser/PI	(2) 15	0
Application Code:	...	(3)	
Unit:	U/L	(4)	
Data Mode:	On board	(5)	
Control Interval:	1000	(6)	
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0	* Assigned value	
Expected Ranges Male:	0 - 42	... Data entered by the operator	
Female:	0 - 42		
Repeat Range:	0 - 500		
Technical Range:	0 - 500		

DIRECT BILIRUBIN

Spectrophotometric
DIAZOTIZED SULFANILIC

Instrument: HITACHI 912

Principle of the method

Direct bilirubin in the sample reacts with diazotized sulfanilic acid forming a coloured complex that can be measured by spectrophotometry. The terms "direct" and "total" refer to the reaction characteristics of serum bilirubin in the absence or presence of solubilizing (accelerating) reagents, and are only approximately equivalent to the conjugated and unconjugated fractions.

Samples

Serum.
Stable for 2 days at 2-8 °C and protected from light.

Reagent preparation

Working Reagent: Transfer the contents of one Reagent B vial into a Reagent A-D bottle. Mix thoroughly.
Stable for 20 days at 2-8°C.

Performance characteristics

- Linearity: Up to 15 mg/dL.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	BIL-D	Select Test:	BIL-D
Test Name:	BIL-D	Calibration Type:	Linear
Assay/Time/Point:	1 Point / 3 / 8	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water / 0	SD Limit:	0.1
Wavelength (Second./Main):	700 / 546	Duplicate Limit:	10 % / 50 Abs
Sample Volume (Normal):	20 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	5 / 0 / 0	S1 Abs. Range:	-32000 / 32000
(Increased):	20 / 0 / 0	OTHERS	
Reagent (R1) T1:	250 / 0 / ... / 20	Select Test:	BIL-T
(R2) T2:	0 / 0 / ... / 0	<i>Calib. Code</i>	<i>Concentration</i>
(R3) T3:	0 / 0 / ... / 0	(1) ...	0.00
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	32000 – Increase	(3)	...
Prozone Limit:	-32000 – Lower	(4)	
RANGE		(5)	
Select Test:	BIL-D	(6)	
Report Name:	Direct bilirubin	<i>Sample volume</i>	<i>Diluted</i>
Name:	BIL-D	(1) 5	0
Select Sample Type:	Ser/PI	(2) 5	0
Application Code:	...	(3)	0
Unit:	mg/dL	(4)	
Data Mode:	On board	(5)	
Control Interval:	1000	(6)	
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0	* Assigned value	
Expected Ranges Male:	0.0 – 0.25	... Data entered by the operator	
Female:	0.0 – 0.25		
Repeat Range:	0 - 18.00		
Technical Range:	0 - 18.00		

TOTAL BILIRUBIN

Spectrophotometric
DIAZOTIZED SULFANILIC

Instrument: HITACHI 912

Principle of the method

Total bilirubin in the sample reacts with diazotized sulfanilic in acid medium forming a coloured complex that can be measured by spectrophotometry. Both direct (conjugated with glucuronate) and indirect (unconjugated) bilirubin couple with diazo in the presence of cetrimide. The terms "direct" and "total" refer to the reaction characteristics of serum bilirubin in the absence or presence of solubilizing (accelerating) reagents, and are only approximately equivalent to the conjugated and unconjugated fractions.

Samples

Serum.

Stable for 20 days at 2-8 °C and protected from light.

Reagent preparation

Working Reagent: Transfer the contents of one Reagent B vial into a Reagent A-T bottle. Mix thoroughly.

Stable for 20 days at 2-8°C.

Performance characteristics

- Linearity: Up to 18 mg/dL.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	BIL-T	Select Test:	BIL-T
Test Name:	BIL-T	Calibration Type:	Linear
Assay/Time/Point:	1 Point / 3 / 8	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water / 0	SD Limit:	0.1
Wavelength (Second./Main):	700 / 546	Duplicate Limit:	10 % / 50 Abs
Sample Volume (Normal):	20 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	5 / 0 / 0	S1 Abs. Range:	-32000 / 32000
(Increased):	20 / 0 / 0	OTHERS	
Reagent (R1) T1:	250 / 0 / ... / 20	Select Test:	BIL-T
(R2) T2:	0 / 0 / ... / 0	Calib. Code	Concentration
(R3) T3:	0 / 0 / ... / 0	(1) ...	0.00
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	32000 - Increase	(3)	
Prozone Limit:	-32000 - Lower	(4)	
RANGE		(5)	
Select Test:	BIL-T	(6)	
Report Name:	Total bilirubin	Sample volume	Diluted
Name:	BIL-T	(1) 5	0
Select Sample Type:	Ser/PI	(2) 5	0
Application Code:	...	(3)	
Unit:	mg/dL	(4)	
Data Mode:	On board	(5)	
Control Interval:	1000	(6)	
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0	* Assigned value	
Expected Ranges Male:	0.0 - 1.10	... Data entered by the operator	
Female:	0.0 - 1.10		
Repeat Range:	0 - 18.00		
Technical Range:	0 - 18.00		

CALCIUM

Spectrophotometric
METHYLTHYMOL BLUE

Instrument: HITACHI 912

Principle of the method

Calcium in the sample reacts with methylthymol blue in alkaline medium forming a coloured complex that can be measured by spectrophotometry. Hydroxyquinoline is included in the reagent to remove magnesium interference.

Samples

Serum, heparinized plasma, urine.

Calcium in serum or plasma is stable for 10 days at 2-8 °C.

Anticoagulants other than heparin should not be used.

Reagent preparation

Working Reagent: Mix equal volumes of Reagent A and Reagent B. Mix thoroughly.

Stable for 2 days at 2-8°C.

Performance characteristics

- Linearity: Up to 15 mg/dL.
- Interferences: Hemoglobin (1.5 g/L), bilirubin (20 mg/dL), magnesium (10 mg/dL) and phosphate (20 mg/dL) do not interfere.

Instrument settings

<p>ANALYZE</p> <p>Select Test: CA</p> <p>Test Name: CA</p> <p>Assay/Time/Point: 1 Point / 3 / 8</p> <p>Analyse cycle time: 10 sec.</p> <p>Diluent/Expiration: Water / 0</p> <p>Wavelength (Second./Main): 700 / 600</p> <p>Sample Volume (Normal): 3 / 0 / 0</p> <p style="padding-left: 20px;">(Decreased): 2 / 0 / 0</p> <p style="padding-left: 20px;">(Increased): 6 / 0 / 0</p> <p>Reagent (R1) T1: 270 / 0 / ... / 90</p> <p style="padding-left: 20px;">(R2) T2: 0 / 0 / ... / 0</p> <p style="padding-left: 20px;">(R3) T3: 0 / 0 / ... / 0</p> <p style="padding-left: 20px;">(R4) T4: 0 / 0 / ... / 0</p> <p>Abs. Limit: 32000 – Increase</p> <p>Prozone Limit: -32000 – Lower</p> <p>RANGE</p> <p>Select Test: CA</p> <p>Report Name: Calcium</p> <p>Name: CA</p> <p>Select Sample Type: Ser/PI</p> <p>Application Code: ...</p> <p>Unit: mg/dL</p> <p>Data Mode: On board</p> <p>Control Interval: 1000</p> <p>Instrument Factor (Y=aX+b): a = 1.0 b = 0.0</p> <p>Expected Ranges Male: 9.0 – 10.7</p> <p style="padding-left: 20px;">Female: 9.0 – 10.7</p> <p>Repeat Range: 0 - 15</p> <p>Technical Range: 0 - 15</p>	<p>CALIBRATION</p> <p>Select Test: CA</p> <p>Calibration Type: Linear</p> <p>Points/Span Point: 2 / 2</p> <p>Weight: 0</p> <p>SD Limit: 0.1</p> <p>Duplicate Limit: 10 % / 50 Abs</p> <p>Sensitivity Range: -9999 / 9999</p> <p>S1 Abs. Range: -32000 / 32000</p> <p>OTHERS</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">Select Test:</th> <th style="width: 30%;">Calib. Code</th> <th style="width: 30%;">Concentration</th> <th style="width: 35%;">CA Position</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>...</td> <td>0.0</td> <td>...</td> </tr> <tr> <td>(2)</td> <td>...</td> <td>*</td> <td>...</td> </tr> <tr> <td>(3)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(4)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(5)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(6)</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 30%;">Sample volume</th> <th style="width: 30%;">Diluted</th> <th style="width: 35%;">Diluent</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>3</td> <td>0</td> <td>0</td> </tr> <tr> <td>(2)</td> <td>3</td> <td>0</td> <td>0</td> </tr> <tr> <td>(3)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(4)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(5)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(6)</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>* Assigned value</p> <p>... Data entered by the operator</p>	Select Test:	Calib. Code	Concentration	CA Position	(1)	...	0.0	...	(2)	...	*	...	(3)				(4)				(5)				(6)					Sample volume	Diluted	Diluent	(1)	3	0	0	(2)	3	0	0	(3)				(4)				(5)				(6)			
Select Test:	Calib. Code	Concentration	CA Position																																																						
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CHOLESTEROL

Enzymatic-spectrophotometric
CHOLESTEROL OXIDASE/PEROXIDASE

Instrument: HITACHI 912

Principle of the method

Free and esterified cholesterol in the sample originates, by means of some coupled reactions, a coloured complex that can be measured by spectrophotometry.

Samples

Serum or plasma.

Stable for 7 days at 2-8°C.

Heparin, EDTA, oxalate and fluoride may be used as anticoagulants.

Reagent preparation

Reagent is ready to be used

Performance characteristics

- Interferences: Hemoglobin (3 g/L), ascorbic acid (0.3 mmol/L) and bilirubin (0.25 mmol/L) interfere. Lipemia does not affect results.
- Linearity: Up to 850 mg/dL.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	CHOL	Select Test:	CHOL
Test Name:	CHOL	Calibration Type:	Linear
Assay/Time/Point:	1 Point / 10 / 31	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water / 0	SD Limit:	0.1
Wavelength (Second./Main):	700 / 546	Duplicate Limit:	10 % / 50 Abs
Sample Volume (Normal):	3 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	2 / 0 / 0	S1 Abs. Range:	-32000 / 32000
(Increased):	6 / 0 / 0	OTHERS	
Reagent (R1) T1:	250 / 0 / ... / 28	Select Test:	CHOL
(R2) T2:	0 / 0 / ... / 0	<i>Calib. Code</i>	<i>Concentration</i>
(R3) T3:	0 / 0 / ... / 0	(1) ...	0
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	32000 – Increase	(3)	...
Prozone Limit:	-32000 – Lower	(4)	
		(5)	
		(6)	
RANGE		<i>Sample volume</i>	<i>Diluted</i>
Select Test:	CHOL	(1) 3	0
Report Name:	Cholesterol	(2) 3	0
Name:	CHOL	(3)	
Select Sample Type:	Ser/PI	(4)	
Application Code:	...	(5)	
Unit:	mg/dL	(6)	
Data Mode:	On board		
Control Interval:	1000		
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0		
Expected Ranges Male:	123 – 250		
Female:	130 – 270		
Repeat Range:	0 - 850		
Technical Range:	0 - 850		
		* Assigned value	
		... Data entered by the operator	

CREATININE

Kinetic-spectrophotometric
ALKALINE PICRATE

Instrument: HITACHI 912

Principle of the method

Creatinine in the sample reacts with picrate in alkaline medium forming a coloured complex. The complex formation rate is measured in a short period to avoid interferences.

Samples

Serum, plasma, urine.

Creatinine in serum or plasma is stable for 24 hours at 2-8°C.

Heparin, EDTA, oxalate and fluoride may be used as anticoagulants.

Reagent preparation

Working Reagent: Mix equal volumes of Reagent A and Reagent B. Mix thoroughly.

Stable for 2 months at 2-8°C.

Performance characteristics

- Interferences: Hemoglobin (0.1 g/L), bilirubin (10 mg/dL), protein and ketonic bodies do not interfere.
- Linearity: Up to 20 mg/dL (serum or plasma).

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	CREA	Select Test:	CREA
Test Name:	CREA	Calibration Type:	Linear
Assay/Time/Point:	2 Point Rate / 4 / 9 / 13	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water / 0	SD Limit:	0.1
Wavelength (Second./Main):	700 / 505	Duplicate Limit:	10 % / 50 Abs
Sample Volume (Normal):	20 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	10 / 0 / 0	S1 Abs. Range:	-32000 / 32000
(Increased):	20 / 0 / 0	OTHERS	
Reagent (R1) T1:	250 / 0 / ... / 60	Select Test:	CREA
(R2) T2:	0 / 0 / ... / 0	Calib. Code	Concentration
(R3) T3:	0 / 0 / ... / 0	(1) ...	0.0
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	20000 – Increase	(3)	...
Prozone Limit:	-32000 – Lower	(4)	
RANGE		(5)	
Select Test:	CREA	(6)	
Report Name:	Creatinine	Sample volume	Diluted
Name:	CREA	(1) 20	0
Select Sample Type:	Ser/PI	(2) 20	0
Application Code:	...	(3)	
Unit:	mg/dL	(4)	
Data Mode:	On board	(5)	
Control Interval:	1000	(6)	
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0		
Expected Ranges Male:	0.6 – 1.1		
Female:	0.5 – 0.9		
Repeat Range:	0 - 25	* Assigned value	
Technical Range:	0 - 25	... Data entered by the operator	

GAMMA-GLUTAMYLTRANSFERASE (GGT)

Continuous-spectrophotometric
IFCC

Instrument: HITACHI 912

Principle of the method

Gamma-glutamyltransferase (γ -GT) catalyzes the transfer of the γ -glutamyl group from γ -glutamyl-3-carboxy-4-nitroanilide to glycylglycine, liberating 3-carboxy-4-nitroaniline. The catalytic concentration is determined from the rate of 3-carboxy-4-nitroaniline formation.

Samples

Serum.
Gamma-glutamyltransferase in serum is stable for 5 days at 2-8 °C.

Reagent preparation

Working Reagent: Pour the contents of the Reagent B into the Reagent A bottle. Mix gently.
Stable for 2 months at 2-8 °C.

Performance characteristics

- Linearity: up to 600 U/L.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	GGT	Select Test:	GGT
Test Name:	GGT	Calibration Type:	Linear
Assay/Time/Point:	Rate A / 5 / 7 / 15	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water / 0	SD Limit:	0.1
Wavelength (Second./Main):	700 / 415	Duplicate Limit:	5 % / 20 Abs
Sample Volume (Normal):	12 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	3 / 0 / 0	S1 Abs. Range:	-32000 / 32000
(Increased):	20 / 0 / 0	OTHERS	
Reagent (R1) T1:	240 / 0 / ... / 14	Select Test:	GGT
(R2) T2:	0 / 0 / ... / 0	Calib. Code	Concentration
(R3) T3:	0 / 0 / ... / 0	(1) ...	0
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	20000 - Increase	(3)	
Prozone Limit:	-32000 - Lower	(4)	
		(5)	
		(6)	
RANGE		Sample volume	Diluted
Select Test:	GGT	(1) 12	0
Report Name:	Gamma-GT	(2) 12	0
Name:	GGT	(3)	
Select Sample Type:	Ser/PI	(4)	
Application Code:	...	(5)	
Unit:	U/L	(6)	
Data Mode:	On board		
Control Interval:	1000		
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0		
Expected Ranges Male:	15 - 86		
Female:	10 - 40		
Repeat Range:	0 - 600		
Technical Range:	0 - 600		
		* Assigned value	
		... Data entered by the operator	

GLUCOSE

Enzymatic-spectrophotometric
GLUCOSE OXIDASE/PEROXIDASE

Instrument: HITACHI 912

Principle of the method

Glucose in the sample originates, by means of some coupled reactions, a coloured complex that can be measured by spectrophotometry.

Samples

Serum or plasma.

Stable for 7 days at 2-8°C.

Heparin, EDTA, oxalate and fluoride may be used as anticoagulants.

Reagent preparation

Reagent is ready to be used

Performance characteristics

- Interferences: Hemoglobin (0.3 g/L), ascorbic acid (10 mg/dL) and bilirubin (15 mg/dL) interfere. Moderate lipemia does not affect the results.
- Linearity: Up to 500 mg/dL.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	GLU	Select Test:	GLU
Test Name:	GLU	Calibration Type:	Linear
Assay/Time/Point:	1 Point / 10 / 31	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water / 0	SD Limit:	0.1
Wavelength (Second./Main):	700 / 505	Duplicate Limit:	5 % / 20 Abs
Sample Volume (Normal):	3 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	20 / 10 / 180	S1 Abs. Range:	-32000 / 32000
(Increased):	6 / 0 / 0	OTHERS	
Reagent (R1) T1:	300 / 0 / ... / 28	Select Test:	GLU
(R2) T2:	0 / 0 / ... / 0	Calib. Code	Concentration
(R3) T3:	0 / 0 / ... / 0	(1) ...	0
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	32000 – Increase	(3)	...
Prozone Limit:	-32000 – Lower	(4)	
RANGE		(5)	
Select Test:	GLU	(6)	
Report Name:	Glucose	Sample volume	Diluted
Name:	GLU	(1) 3	0
Select Sample Type:	Ser/PI	(2) 3	0
Application Code:	...	(3)	
Unit:	mg/dL	(4)	
Data Mode:	On board	(5)	
Control Interval:	1000	(6)	
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0	* Assigned value	
Expected Ranges Male:	76 – 110	... Data entered by the operator	
Female:	76 – 110		
Repeat Range:	0 - 500		
Technical Range:	0 - 500		

CHOLESTEROL HDL

DIRECT
POLYMER/DETERGENT

Instrument: **HITACHI 912**

Principle of the method

Combined action of polymers and detergents solubilizes cholesterol from high density lipoproteins (HDL) in the sample, but not from low density lipoproteins (LDL), very low density lipoproteins (VLDL) and chylomicrons. The HDL cholesterol is then spectrophotometrically measured by means of some coupled reactions.

Samples

Serum collected by standard procedures.
HDL cholesterol in serum or plasma is stable for 7 days at 2-8°C. Heparin, EDTA, oxalate and fluoride may be used as anticoagulants.

Reagent preparation

Reagent 1: Use the Reagent A.
Reagent 2: Use the Reagent B.

Performance characteristics

- Detection limit: 6.2 mg/dL
- Linearity: up to 120 mg/dL.
- Interferences: Hemoglobin (10 g/L) does not interfere. Lipemia (triglycerides 1.25 g/L) and bilirubin (20 mg/dL) may interfere. Other drugs and substances may interfere.

Instrument settings

<p>ANALYZE</p> <p>Select Test: HDL D</p> <p>Test Name: HDL Direct</p> <p>Assay/Time/Point: 2 Point End / 10 / 15 / 31</p> <p>Analyse cycle time: 10 sec.</p> <p>Diluent/Expiration: Water / 0</p> <p>Wavelength (Second./Main): 700 / 505</p> <p>Sample Volume (Normal): 3 / 0 / 0</p> <p style="padding-left: 20px;">(Decreased): 2 / 0 / 0</p> <p style="padding-left: 20px;">(Increased): 6 / 0 / 0</p> <p>Reagent (R1) T1: 300 / 0 / ... / 90</p> <p style="padding-left: 20px;">(R2) T2: 0 / 0 / ... / 0</p> <p style="padding-left: 20px;">(R3) T3: 100 / 0 / ... / 90</p> <p style="padding-left: 20px;">(R4) T4: 0 / 0 / ... / 0</p> <p>Abs. Limit: 32000 – Increase</p> <p>Prozone Limit: -32000 – Lower</p> <p>RANGE</p> <p>Select Test: HDL D</p> <p>Report Name: HDL Direct</p> <p>Name: HDL D</p> <p>Select Sample Type: Ser/PI</p> <p>Application Code: ...</p> <p>Unit: mg/dL</p> <p>Data Mode: On board</p> <p>Control Interval: 1000</p> <p>Instrument Factor (Y=aX+b): a = 1.0 b = 0.0</p> <p>Expected Ranges Male: 35 – ...</p> <p style="padding-left: 20px;">Female: 35 – ...</p> <p>Repeat Range: 6.2 - 120</p> <p>Technical Range: 6.2 - 120</p>	<p>CALIBRATION</p> <p>Select Test: HDL D</p> <p>Calibration Type: Linear</p> <p>Points/Span Point: 2 / 2</p> <p>Weight: 0</p> <p>SD Limit: 0.1</p> <p>Duplicate Limit: 10 % / 50 Abs</p> <p>Sensitivity Range: -9999 / 9999</p> <p>S1 Abs. Range: -32000 / 32000</p> <p>OTHERS</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 30%;">Calib. Code</th> <th style="width: 30%;">Concentration</th> <th style="width: 35%;">HDL D Position</th> </tr> </thead> <tbody> <tr><td>(1)</td><td>...</td><td>0.0</td><td>...</td></tr> <tr><td>(2)</td><td>...</td><td>*</td><td>...</td></tr> <tr><td>(3)</td><td></td><td></td><td></td></tr> <tr><td>(4)</td><td></td><td></td><td></td></tr> <tr><td>(5)</td><td></td><td></td><td></td></tr> <tr><td>(6)</td><td></td><td></td><td></td></tr> </tbody> </table> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 25%;">Sample volume</th> <th style="width: 25%;">Diluted</th> <th style="width: 45%;">Diluent</th> </tr> </thead> <tbody> <tr><td>(1)</td><td>3</td><td>0</td><td>0</td></tr> <tr><td>(2)</td><td>3</td><td>0</td><td>0</td></tr> <tr><td>(3)</td><td></td><td></td><td></td></tr> <tr><td>(4)</td><td></td><td></td><td></td></tr> <tr><td>(5)</td><td></td><td></td><td></td></tr> <tr><td>(6)</td><td></td><td></td><td></td></tr> </tbody> </table> <p>* Assigned value ... Data entered by the operator</p>		Calib. Code	Concentration	HDL D Position	(1)	...	0.0	...	(2)	...	*	...	(3)				(4)				(5)				(6)					Sample volume	Diluted	Diluent	(1)	3	0	0	(2)	3	0	0	(3)				(4)				(5)				(6)			
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IRON

Spectrophotometric
FERROZINE

Instrument: HITACHI 912

Principle of the method

Transferrin-bound ferric ions in the sample are released by guanidinium and reduced to ferrous by means of hydroxylamine. Ferrous ions react with ferrozine forming a coloured complex that can be measured by spectrophotometry.

Samples

Serum or heparinized plasma.
Stable for 7 days at 2-8°C.

Reagent preparation

Reagent 1: use the Reagent A.
Reagent 2: use the Reagent B.

Performance characteristics

- Linearity: up to 1000 µg/dL.
- Interferences: Do not use hemolyzed sera.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	IRON	Select Test:	IRON
Test Name:	IRON	Calibration Type:	Linear
Assay/Time/Point:	2 Point End / 10 / 15 - 31	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water / 0	SD Limit:	0.1
Wavelength (Second./Main):	700 / 570	Duplicate Limit:	10 % / 50 Abs
Sample Volume (Normal):	20 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	10 / 0 / 0	S1 Abs. Range:	-32000 / 32000
(Increased):	30 / 0 / 0	OTHERS	
Reagent (R1) T1:	200 / 0 / ... / 90	Select Test:	IRON
(R2) T2:	0 / 0 / ... / 0	<i>Calib. Code</i>	<i>Concentration</i>
(R3) T3:	50 / 0 / ... / 90	(1) ...	0
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	32000 – Increase	(3)	...
Prozone Limit:	-32000 – Lower	(4)	
RANGE		(5)	
Select Test:	IRON	(6)	
Report Name:	IRON	<i>Sample volume</i>	<i>Diluted</i>
Name:	IRON	(1) 20	0
Select Sample Type:	Ser/PI	(2) 20	0
Application Code:	...	(3)	0
Unit:	µg/dL	(4)	
Data Mode:	On board	(5)	
Control Interval:	1000	(6)	
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0	* Assigned value	
Expected Ranges Male:	59 – 158	... Data entered by the operator	
Female:	37 – 145		
Repeat Range:	0 - 1000		
Technical Range:	0 - 1000		

CHOLESTEROL LDL

DIRECT
POLYMER/DETERGENT

Instrument: **HITACHI 912**

Principle of the method

Combined action of polymers and detergents solubilizes cholesterol from low density lipoproteins (LDL) in the sample, but not from high density lipoproteins (HDL), very low density lipoproteins (VLDL) and chylomicrons. The LDL cholesterol is then spectrophotometrically measured by means of some coupled reactions.

Samples

Serum collected by standard procedures.
LDL cholesterol in serum or plasma is stable for 4 days at 2-8°C.

Reagent preparation

Reagent 1: Use the Reagent A.
Reagent 2: Use the Reagent B.

Performance characteristics

- Detection limit: 3.5 mg/dL
- Linearity: up to 450 mg/dL.
- Interferences: Hemoglobin (10 g/L) does not interfere. Lipemia (triglycerides 5 g/L) and bilirubin (10 mg/dL) may interfere. Other drugs and substances may interfere.

Instrument settings

<p>ANALYZE</p> <p>Select Test: LDL D</p> <p>Test Name: LDL Direct</p> <p>Assay/Time/Point: 2 Point End / 10 / 15 / 31</p> <p>Analyse cycle time: 10 sec.</p> <p>Diluent/Expiration: Water / 0</p> <p>Wavelength (Second./Main): 700 / 546</p> <p>Sample Volume (Normal): 3 / 0 / 0</p> <p style="padding-left: 20px;">(Decreased): 2 / 0 / 0</p> <p style="padding-left: 20px;">(Increased): 6 / 0 / 0</p> <p>Reagent (R1) T1: 300 / 0 / ... / 90</p> <p style="padding-left: 20px;">(R2) T2: 0 / 0 / ... / 0</p> <p style="padding-left: 20px;">(R3) T3: 100 / 0 / ... / 90</p> <p style="padding-left: 20px;">(R4) T4: 0 / 0 / ... / 0</p> <p>Abs. Limit: 32000 – Increase</p> <p>Prozone Limit: -32000 – Lower</p> <p>RANGE</p> <p>Select Test: LDL D</p> <p>Report Name: LDL Direct</p> <p>Name: LDL D</p> <p>Select Sample Type: Ser/PI</p> <p>Application Code: ...</p> <p>Unit: mg/dL</p> <p>Data Mode: On board</p> <p>Control Interval: 1000</p> <p>Instrument Factor (Y=aX+b): a = 1.0 b = 0.0</p> <p>Expected Ranges Male: ... – 130</p> <p style="padding-left: 20px;">Female: ... – 130</p> <p>Repeat Range: 3.5 – 450</p> <p>Technical Range: 3.5 - 450</p>	<p>CALIBRATION</p> <p>Select Test: LDL D</p> <p>Calibration Type: Linear</p> <p>Points/Span Point: 2 / 2</p> <p>Weight: 0</p> <p>SD Limit: 0.1</p> <p>Duplicate Limit: 10 % / 50 Abs</p> <p>Sensitivity Range: -9999 / 9999</p> <p>S1 Abs. Range: -32000 / 32000</p> <p>OTHERS</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 30%; text-align: center;"><i>Calib. Code</i></th> <th style="width: 30%; text-align: center;"><i>Concentration</i></th> <th style="width: 30%; text-align: center;">LDL D</th> </tr> <tr> <th></th> <th></th> <th></th> <th style="text-align: center;"><i>Position</i></th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td style="text-align: center;">...</td> <td style="text-align: center;">0.0</td> <td style="text-align: center;">...</td> </tr> <tr> <td>(2)</td> <td style="text-align: center;">...</td> <td style="text-align: center;">*</td> <td style="text-align: center;">...</td> </tr> <tr> <td>(3)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(4)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(5)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(6)</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 20%; text-align: center;"><i>Sample volume</i></th> <th style="width: 20%; text-align: center;"><i>Diluted</i></th> <th style="width: 50%; text-align: center;"><i>Diluent</i></th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td style="text-align: center;">3</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>(2)</td> <td style="text-align: center;">3</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>(3)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(4)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(5)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(6)</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>* Assigned value ... Data entered by the operator</p>		<i>Calib. Code</i>	<i>Concentration</i>	LDL D				<i>Position</i>	(1)	...	0.0	...	(2)	...	*	...	(3)				(4)				(5)				(6)					<i>Sample volume</i>	<i>Diluted</i>	<i>Diluent</i>	(1)	3	0	0	(2)	3	0	0	(3)				(4)				(5)				(6)			
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PHOSPHORUS

Spectrophotometric
PHOSPHOMOLYBDATE/UV

Instrument: HITACHI 912

Principle of the method

Inorganic phosphorus in the sample reacts with molybdate in acid medium forming a phosphomolybdate complex that can be measured by spectrophotometry.

Samples

Serum, plasma, urine.

Phosphorus in serum or plasma is stable for 7 days at 2-8°C. EDTA and fluoride may be used as anticoagulants.

Reagent preparation

Reagent 1: Use the Reagent A.

Reagent 2: Use the Reagent B.

Performance characteristics

- Interferences: Do not use hemolyzed sera.
- Linearity: Up to 20 mg/dL.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	PHOS	Select Test:	PHOS
Test Name:	PHOS	Calibration Type:	Linear
Assay/Time/Point:	2 Point End / 10 / 15 / 31	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water / 0	SD Limit:	0.1
Wavelength (Second./Main):	660 / 340	Duplicate Limit:	10 % / 50 Abs
Sample Volume (Normal):	3 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	2 / 0 / 0	S1 Abs. Range:	-32000 / 32000
(Increased):	6 / 0 / 0	OTHERS	
Reagent (R1) T1:	210 / 0 / ... / 90	Select Test:	PHOS
(R2) T2:	0 / 0 / ... / 0	Calib. Code	Concentration
(R3) T3:	90 / 0 / ... / 90	(1) ...	0.0
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	32000 – Increase	(3)	
Prozone Limit:	-32000 – Lower	(4)	
RANGE		(5)	
Select Test:	PHOS	(6)	
Report Name:	Phosphorus	Sample volume	Diluted
Name:	PHOS	(1) 3	0
Select Sample Type:	Ser/PI	(2) 3	0
Application Code:	...	(3)	
Unit:	mg/dL	(4)	
Data Mode:	On board	(5)	
Control Interval:	1000	(6)	
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0	* Assigned value	
Expected Ranges Male:	2.7 – 4.5	... Data entered by the operator	
Female:	2.7 – 4.5		
Repeat Range:	0 - 20		
Technical Range:	0 - 20		

PROTEIN

Spectrophotometric
BIURET

Instrument: **HITACHI 912**

Principle of the method

Protein in the sample reacts with copper (II) ion in alkaline medium forming a coloured complex that can be measured by spectrophotometry.

Samples

Serum, heparinized plasma.

Stable for 8 days at 2-8°C.

Anticoagulants other than heparin should not be used.

Reagent preparation

Reagent is ready to be used.

Performance characteristics

- Interferences: Hemoglobin (0.2 g/L) and bilirubin (15 mg/dL) interfere. Moderate lipemia does not affect the results.
- Linearity: Up to 150 g/L.

Instrument settings

<p>ANALYZE</p> <p>Select Test: PROT</p> <p>Test Name: PROT</p> <p>Assay/Time/Point: 1 Point / 5 / 16</p> <p>Analyse cycle time: 10 sec.</p> <p>Diluent/Expiration: Water / 0</p> <p>Wavelength (Second./Main): 700 / 546</p> <p>Sample Volume (Normal): 5 / 0 / 0</p> <p style="padding-left: 20px;">(Decreased): 3 / 0 / 0</p> <p style="padding-left: 20px;">(Increased): 10 / 0 / 0</p> <p>Reagent (R1) T1: 250 / 0 / ... / 90</p> <p style="padding-left: 20px;">(R2) T2: 0 / 0 / ... / 0</p> <p style="padding-left: 20px;">(R3) T3: 0 / 0 / ... / 0</p> <p style="padding-left: 20px;">(R4) T4: 0 / 0 / ... / 0</p> <p>Abs. Limit: 32000 – Increase</p> <p>Prozone Limit: -32000 – Lower</p> <p>RANGE</p> <p>Select Test: PROT</p> <p>Report Name: Total Proteins</p> <p>Name: PROT</p> <p>Select Sample Type: Ser/PI</p> <p>Application Code: ...</p> <p>Unit: g/L</p> <p>Data Mode: On board</p> <p>Control Interval: 1000</p> <p>Instrument Factor (Y=aX+b): a = 1.0 b = 0.0</p> <p>Expected Ranges Male: 65 – 83</p> <p style="padding-left: 20px;">Female: 65 – 83</p> <p>Repeat Range: 0 - 150</p> <p>Technical Range: 0 - 150</p>	<p>CALIBRATION</p> <p>Select Test: PROT</p> <p>Calibration Type: Linear</p> <p>Points/Span Point: 2 / 2</p> <p>Weight: 0</p> <p>SD Limit: 0.1</p> <p>Duplicate Limit: 10 % / 50 Abs</p> <p>Sensitivity Range: -9999 / 9999</p> <p>S1 Abs. Range: -32000 / 32000</p> <p>OTHERS</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 20%;">Calib. Code</th> <th style="width: 20%;">Concentration</th> <th style="width: 15%;">PROT</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;">Position</td> </tr> <tr> <td>(1)</td> <td style="text-align: center;">...</td> <td style="text-align: center;">0</td> <td style="text-align: center;">...</td> </tr> <tr> <td>(2)</td> <td style="text-align: center;">...</td> <td style="text-align: center;">*</td> <td style="text-align: center;">...</td> </tr> <tr> <td>(3)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(4)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(5)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(6)</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 20%;">Sample volume</th> <th style="width: 20%;">Diluted</th> <th style="width: 15%;">Diluent</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td style="text-align: center;">5</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>(2)</td> <td style="text-align: center;">5</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>(3)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(4)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(5)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(6)</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>* Assigned value ... Data entered by the operator</p>		Calib. Code	Concentration	PROT				Position	(1)	...	0	...	(2)	...	*	...	(3)				(4)				(5)				(6)					Sample volume	Diluted	Diluent	(1)	5	0	0	(2)	5	0	0	(3)				(4)				(5)				(6)			
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TRIGLYCERIDES

Enzymatic-spectrophotometric
GLYCEROL PHOSPHATE OXIDASE/PEROXIDASE

Instrument: HITACHI 912

Principle of the method

Triglycerides in the sample originates, by means of some coupled reactions, a coloured complex that can be measured by spectrophotometry.

Samples

Serum or plasma.

Stable for 5 days at 2-8°C.

Heparin, EDTA, oxalate and fluoride may be used as anticoagulants.

Reagent preparation

Reagent is ready to be used

Performance characteristics

- Interferences: Hemoglobin (3 g/L), ascorbic acid (0.3 mmol/L) and bilirubin (0.25 mmol/L) interfere. Lipemia does not affect results.
- Linearity: Up to 600 mg/dL.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	TRIG	Select Test:	TRIG
Test Name:	TRIG	Calibration Type:	Linear
Assay/Time/Point:	1 Point / 10 / 31	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water / 0	SD Limit:	0.1
Wavelength (Second./Main):	700 / 546	Duplicate Limit:	5 % / 100 Abs
Sample Volume (Normal):	3 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	20 / 10 / 180	S1 Abs. Range:	-32000 / 32000
(Increased):	6 / 0 / 0	OTHERS	
Reagent (R1) T1:	250 / 0 / ... / 14	Select Test:	TRIG
(R2) T2:	0 / 0 / ... / 0	<i>Calib. Code</i>	<i>Concentration</i>
(R3) T3:	0 / 0 / ... / 0	(1) ...	0
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	32000 - Increase	(3)	...
Prozone Limit:	-32000 - Lower	(4)	
		(5)	
		(6)	
RANGE		<i>Sample volume</i>	<i>Diluted</i>
Select Test:	TRIG	(1) 3	0
Report Name:	Triglycerides	(2) 3	0
Name:	TRIG	(3)	
Select Sample Type:	Ser/PI	(4)	
Application Code:	...	(5)	
Unit:	mg/dL	(6)	
Data Mode:	On board		
Control Interval:	1000		
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0		
Expected Ranges Male:	60 - 150		
Female:	60 - 150		
Repeat Range:	0 - 500		
Technical Range:	0 - 500		
		* Assigned value	
		... Data entered by the operator	

UREA/BUN

Enzymatic-spectrophotometric
ULTRAVIOLET

Instrument: HITACHI 912

Principle of the method

Urea in the sample consumes, by means of some coupled reactions, NADH that can be measured by spectrophotometry.

Samples

Serum, plasma, urine.
Stable for 7 days at 2-8°C.
Heparin is recommended as anticoagulant.

Reagent preparation

Working Reagent: Transfer the contents of one Reagent B vial into a Reagent A bottle. Mix thoroughly.
Stable for 2 months at 2-8°C.

Performance characteristics

- Interferences: Ammonium salts of the anticoagulants interfere.
- Linearity: Up to 200 mg/dL.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	UREA	Select Test:	UREA
Test Name:	UREA	Calibration Type:	Linear
Assay/Time/Point:	2 Point Rate / 4 / 9 / 13	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water / 0	SD Limit:	0.1
Wavelength (Second./Main):	700 / 340	Duplicate Limit:	10 % / 50 Abs
Sample Volume (Normal):	3 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	20 / 10 / 180	S1 Abs. Range:	-32000 / 32000
(Increased):	6 / 0 / 0	OTHERS	
Reagent (R1) T1:	250 / 0 / ... / 60	Select Test:	UREA
(R2) T2:	0 / 0 / ... / 0	Calib. Code	Concentration
(R3) T3:	0 / 0 / ... / 0	(1) ...	0
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	5000 - Decrease	(3)	...
Prozone Limit:	-32000 - Lower	(4)	...
RANGE		(5)	...
Select Test:	UREA	(6)	...
Report Name:	Urea UV	Sample volume	Diluted
Name:	UREA	(1) 3	0
Select Sample Type:	Ser/PI	(2) 3	0
Application Code:	...	(3)	0
Unit:	mg/dL	(4)	0
Data Mode:	On board	(5)	0
Control Interval:	1000	(6)	0
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0	* Assigned value	
Expected Ranges Male:	10 - 50	... Data entered by the operator	
Female:	10 - 50		
Repeat Range:	0 - 200		
Technical Range:	0 - 200		

URIC ACID

Enzymatic-spectrophotometric
URICASE/PEROXIDASE

Instrument: HITACHI 912

Principle of the method

Uric acid in the sample originates, by means of some coupled reactions, a coloured complex that can be measured by spectrophotometry.

Samples

Serum, heparinized plasma.

Magnesium in serum or plasma is stable for 10 days at 2-8°C.

Anticoagulants other than heparin should not be used.

Reagent preparation

Reagent is ready to be used.

Performance characteristics

- Interferences: Hemoglobin (1 g/L), ascorbic acid (0.3 mmol/L) and bilirubin (15 mg/dL) do not interfere. Lipemia may affect the results
- Linearity: Up to 25 mg/dL.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	UA	Select Test:	UA
Test Name:	UA	Calibration Type:	Linear
Assay/Time/Point:	1 Point / 5 / 15	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water/0	SD Limit:	0.1
Wavelength (Second./Main):	0 / 505	Duplicate Limit:	10 % / 50 Abs
Sample Volume (Normal):	6 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	3 / 0 / 0	S1 Abs. Range:	-32000 / 32000
(Increased):	10 / 0 / 0	OTHERS	
Reagent (R1) T1:	240 / 0 / ... / 90	Select Test:	UA
(R2) T2:	0 / 0 / ... / 0	Calib. Code	Concentration
(R3) T3:	0 / 0 / ... / 0	(1) ...	0.0
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	32000 – Increase	(3)	...
Prozone Limit:	-32000 – Lower	(4)	
RANGE		(5)	
Select Test:	UA	(6)	
Report Name:	Uric acid	Sample volume	Diluted
Name:	UA	(1) 6	0
Select Sample Type:	Ser/PI	(2) 6	0
Application Code:	...	(3)	
Unit:	mg/dL	(4)	
Data Mode:	On board	(5)	
Control Interval:	1000	(6)	
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0	* Assigned value	
Expected Ranges Male:	3.4 – 7.0	... Data entered by the operator	
Female:	2.4 – 5.7		
Repeat Range:	0 - 25		
Technical Range:	0 - 25		

C-REACTIVE PROTEIN-hs (CRP-hs)

Turbidimetry
LATEX-HIGH SENSITIVITY

Instrument: HITACHI 912

Principle of the method

Serum C-reactive protein (CRP) causes agglutination of the latex particles coated with anti-human C-reactive protein. The agglutination of the latex particles is proportional to the CRP concentration and can be measured by turbidimetry.

Samples

Serum.
Stable for 7 days at 2-8 °C.

Reagent preparation

Reagent 1: Use the Reagent A.
Reagent 2: Use the Reagent B.

Performance characteristics

- Measurement interval: 0.06-15 mg/L.
- Interferences: Hemoglobin (10 g/L) and lipemia (triglycerides 10 g/L) do not interfere. Bilirubin (>10 mg/dL) and rheumatoid factors (>75 IU/mL) may interfere.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	CRP-hs	Select Test:	CRP-hs
Test Name:	C reactive protein - hs	Calibration Type:	Logit-Log (4P)
Assay/Time/Point:	2 Point End / 10 / 15 / 32	Points/Span Point:	6 / 6
Analyse cycle time:	10 sec.	Weigh:	0
Diluent/Expiration:	Water / 0	SD Limit:	999
Wavelength (Second./Main):	0 / 546	Duplicate Limit:	10 % / 50 Abs
Sample Volume (Normal):	5 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	10 / 15/ 140	S1 Abs. Range:	-32000 / 32000
(Increased):	10 / 0 / 0	OTHERS	
Reagent (R1) T1:	350 / 0 / ... / 60	Select Test:	CRP-hs
(R2) T2:	0 / 0 / ... / 0	<i>Calib. Code</i>	<i>Concentration</i>
(R3) T3:	40 / 0 / ... / 60	(1) ...	0.00
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	32000 – Increase	(3) ...	*
Prozone Limit:	-32000 – Lower	(4) ...	*
RANGE		(5) ...	*
Select Test:	CRP-hs	(6) ...	*
Report Name:	C reactive protein - hs	<i>Sample volume</i>	<i>Diluted</i>
Name:	CRP-hs	(1) 5	0
Select Sample Type:	Ser/PI	(2) 5	25
Application Code:	...	(3) 5	25
Unit:	mg/dL	(4) 10	25
Data Mode:	On board	(5) 15	25
Control Interval:	1000	(6) 5	0
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0	* Assigned value	
Expected Ranges Male:	0.00 – 7.90	... Data entered by the operator	
Female:	0.00 – 8.5		
Repeat Range:	0.06 – 15.00		
Technical Range:	0.06 – 15.00		

ALBUMIN (URINE)

Turbidimetry
LATEX

Instrument: HITACHI 912

Principle of the method

Albumin in the urine sample causes agglutination of the latex particles coated with anti-human albumin. The agglutination of the particles is proportional to the albumin concentration and can be measured by turbidimetry.

Samples

Urine. Stable for 7 days at 2-8°C.

Urine should be centrifugated before analysis.

Reagent preparation

Reagent 1: Use the Diluent.

Reagent 2: Use the Latex.

Performance characteristics

- Linearity: up to 130 mg/L.
- The zone effect will cause to obtain falsely low values when albumin is present in the sample at a concentration higher than 1000 mg/L.

Instrument settings

ANALYZE		CALIBRATION	
Select Test:	MAU	Select Test:	MAU
Test Name:	Albumin in urine	Calibration Type:	Linear
Assay/Time/Point:	2 Point End / 5 / 4 / 11	Points/Span Point:	2 / 2
Analyse cycle time:	10 sec.	Weight:	0
Diluent/Expiration:	Water / 0	SD Limit:	999
Wavelength (Second./Main):	0 / 546	Duplicate Limit:	10 % / 50 Abs
Sample Volume (Normal):	3 / 0 / 0	Sensitivity Range:	-9999 / 9999
(Decreased):	2 / 0 / 0	S1 Abs. Range:	-32000 / 32000
(Increased):	6 / 0 / 0	OTHERS	
Reagent (R1) T1:	310 / 0 / ... / 90	Select Test:	MAU
(R2) T2:	40 / 0 / ... / 90	Calib. Code	Concentration
(R3) T3:	0 / 0 / ... / 0	(1) ...	0.0
(R4) T4:	0 / 0 / ... / 0	(2) ...	*
Abs. Limit:	32000 - Increase	(3) ...	*
Prozone Limit:	-32000 - Lower	(4) ...	*
RANGE		(5) ...	*
Select Test:	MAU	(6) ...	*
Report Name:	Albumin in urine	Sample volume	Diluted
Name:	MAU	(1) 3	0
Select Sample Type:	Urine	(2) 3	0
Application Code:	...	(3)	
Unit:	mg/L	(4)	
Data Mode:	On board	(5)	
Control Interval:	1000	(6)	
Instrument Factor (Y=aX+b):	a = 1.0 b = 0.0		
Expected Ranges Male:	0.0 - 15.0		
Female:	0.0 - 15.0		
Repeat Range:	0.0 - 130		
Technical Range:	0.0 - 130		
		* Assigned value	
		... Data entered by the operator	