

Reference ranges of analytes OKB

Převzal (funkce) - umístění	Počet	Výtisk	Datum převzetí	Podpis
Internet () -	0			

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**Reference ranges of analytes in serum/plasma (Li heparin)
in adults**

		Analyte	Lower limit	Upper limit	Unit
		Creatinine – males	64	104	μmol/l
		Creatinine – females	49	90	μmol/l
		Urea - males (over 50 years)	3,0	9,2	mmol/l
		Urea - males (under 50 years)	3,2	7,4	mmol/l
		Urea - females (over 50 years)	3,5	7,2	mmol/l
		Urea - females (under 50 years)	2,5	6,7	mmol/l
		Uric acid – males	210	420	μmol/l
		Uric acid – females	150	350	μmol/l
		Total protein	64	79	g/l
		Albumin	36	45	g/l
		Bilirubin total	3,4	20	μmol/l
		Bilirubin direct	1,8	8,6	μmol/l
		AST – males	0,17	0,75	μkat/l
		AST – females	0,17	0,58	μkat/l
		ALT - males	0,17	1,17	μkat/l
		ALT – females	0,17	0,75	μkat/l
		ALP females, males	0,58	1,75	μkat/l
		GGT – males	0,20	1,07	μkat/l
		GGT – females	0,15	0,6	μkat/l
		Cholinesterase – males	85	195	μkat/l
		Cholinesterase – females	67	210	μkat/l
		AMS	0,42	2,08	μkat/l
		AMS pancreatic isoenzyme	0,13	0,88	μkat/l
		Lipase	0,00	1,07	μkat/l
		LD	2,1	3,7	μkat/l
		CK – males	0,50	3,33	μkat/l
		CK – females	0,48	2,80	μkat/l
		Cholesterol total	2,9	5,0	mmol/l
		Triglycerides	0,50	1,69	mmol/l
		Cholesterol HDL – males	1,0	2,1	mmol/l
		Cholesterol HDL – females	1,2	2,7	mmol/l
		Cholesterol LDL - calculated	1,2	3,0	mmol/l
		Cholesterol non HDL – calculated	2,0	3,8	mmol/l
		Osmolality	275	295	mmol/kg
		Sodium	137	144	mmol/l
		Potassium	3,5	5,1	mmol/l
		Chloride	98	107	mmol/l

	Phosphorus inorganic, males (15 - 50 years)	0,71	1,53	mmol/l
	Phosphorus inorganic, males (over 50 years)	0,71	1,23	mmol/l
	Phosphorus inorganic – females	0,76	1,41	mmol/l
	Calcium	2,15	2,55	mmol/l
	Magnesium	0,71	0,94	mmol/l
	Iron - males	10,7	28,6	μmol/l
	Iron – females	7,2	25,9	μmol/l
	Copper – males	11,0	22,0	μmol/l
	Copper – females	12,6	24,3	μmol/l
	Copper free	0,0	1,6	μmol/l
	Zinc	11,0	23,0	μmol/l
Diabetes mellitus				
	Glucose	3,6	5,59	mmol/l
	HbA1c	20	42	mmol/mol
	Glucose - OGTT 0.min. (fasting)	3,6	5,59	mmol/l
	Glucose - OGTT 120.min. (after p.o. glucose)	3,6	7,79	mmol/l
	C peptide	0,37	1,47	nml/l
Monoclonal gammopathies				
	Electrophoresis (serum proteins)	qualitative		
	Immunofixation (serum proteins)	qualitative		
	Immunofixation (urine proteins)	qualitative		
	Kappa free light chains	3,3	19,4	mg/l
	Lambda free light chains	5,7	26,3	mg/l
	Kappa free/lambda free	0,26	1,65	ratio
Plasma proteins				
	Transferrin - males	1,74	3,64	g/l
	Transferrin – females	1,80	3,82	g/l
	Total iron binding capacity	45	72	μmol/l
	Transferrin saturation	16	45	%
	Soluble transferin receptors	1,71	4,13	mg/l
	Ferritin – females 17 - 100 years	13	150	μg/l
	Ferritin – males 20 - 100 years	30	400	μg/l
	Cystatin C (1 - 50 years) males	0,31	0,79	mg/l
	Cystatin C (50-100 years) males	0,41	0,99	mg/l
	Cystatin C (1 – 100 years) females	0,40	0,99	mg/l
	Apo A1 – males	1,04	2,02	g/l
	Apo A1 – females	1,08	2,25	g/l
	Apo B – males	0,66	1,33	g/l
	Apo B – females	0,6	1,17	g/l
	ApoC III	55	95	mg/l
	Lipoprotein (a)		<75	nmol/l
	Ceruloplasmin	0,20	0,60	g/l

	Prealbumin – males 12-60 years	0,18	0,45	g/l
	Prealbumin – males 61-110 years	0,16	0,42	g/l
	Prealbumin – females 12-60 years	0,16	0,38	g/l
	Prealbumin – females 61-110 years	0,14	0,37	g/l
	α-1-antitrypsin	0,88	1,74	g/l
	S100		<0,105	µg/l
Markers of myocardial damage				
	BNP – females, under 45 years	10	89	ng/l
	BNP – females, 45-54 years	10	111	ng/l
	BNP – females, 55-64 years	10	155	ng/l
	BNP – females, 65-74 years	10	159	ng/l
	BNP – females, over 75 years	10	266	ng/l
	BNP – males, under 45 years	10	73	ng/l
	BNP – males, 45-54 years	10	40	ng/l
	BNP – males, 55-64 years	10	80	ng/l
	BNP – males, 65-74 years	10	150	ng/l
	BNP – males, over 75 years	10	121	ng/l
	NT-proBNP		≤ 125	ng/l
	hs – Troponin T (females)		≤ 9	ng/l
	hs – Troponin T (males)		≤16	ng/l
Inflammation markers, immunoglobulins				
	CRP		< 5,0	mg/l
	Procalcitonin		< 0,5	µg/l
	Interleukin 6		< 7	ng/l
	Presepsin (sCD-14 ST)	92	320	ng/l
	ASLO		< 200	klU/l
	Rheumatoid factor		< 30	klU/l
	C3-complement – males	0,82	1,85	g/l
	C3-complement – females	0,83	1,93	g/l
	C4-complement	0,13	0,39	g/l
	IgM – males	0,22	2,40	g/l
	IgM – females	0,33	2,93	g/l
	IgA – males	0,63	4,84	g/l
	IgA – females	0,65	4,21	g/l
	IgG – males	5,4	18,2	g/l
	IgG – females	5,5	16,3	g/l
	IgG subclass 1	3,82	9,29	g/l
	IgG subclass 2	2,42	7,00	g/l
	IgG subclass 3	0,22	1,76	g/l
	IgG subclass 4	0,04	0,86	g/l
Thyroid gland				
	TSH	0,35	4,94	mIU/l

	free T3	2,89	4,88	pmol/l
	free T4	9,0	19,0	pmol/l
	Anti-Tg		< 4,11	kIU/l
	Anti-TPO		< 5,61	kIU/l
	Anti-TSH receptors		< 1,75	IU/l
Markers of bone metabolism				
	Parathormone (1-84)	1,58	6,03	pmol/l
	β-CrossLaps – males (18 - 30 years)	0,16	0,87	μg/l
	β-CrossLaps – males (30 - 50 years)	0,09	0,63	μg/l
	β-CrossLaps – males (50 - 80 years)	0,04	0,84	μg/l
	β-CrossLaps – females (15 - 50 years)	0,03	0,57	μg/l
	β-CrossLaps – females (50 - 80 years)	0,10	1,01	μg/l
	N-terminal propeptide of Collagen type 1- females (premenopausal)	15	70	μg/l
	N-terminal propeptide of Collagen type 1- females (postmenopausal)	15	90	μg/l
	N-terminal propeptide of Collagen type 1-males (25-70 years)	15	80	μg/l
	N-terminal propeptide of Collagen type 1-males (> 70 years)	15	115	μg/
Hormones of reproductive system				
	FSH (follicle-stimulating hormone) - males	1,5	12,4	IU/l
	FSH – females (follicular phase)	3,5	12,5	IU/l
	FSH – females (ovulation phase)	4,7	21,5	IU/l
	FSH – females (luteal phase)	1,7	7,7	IU/l
	FSH – females (postmenopausal)	25,8	134,8	IU/l
	LH (luteinizing hormone) – males	1,7	8,6	IU/l
	LH – females (follicular phase)	2,4	12,6	IU/l
	LH – females (ovulation phase)	14	95,6	IU/l
	LH – females (luteal phase)	1	11,4	IU/l
	LH – females (postmenopausal)	7,7	58,5	IU/l
	Progesterone - males	<0,2	0,5	nmol/l
	Progesterone – females (follicular phase)	0,2	0,6	nmol/l
	Progesterone – females (ovulation phase)	0,2	13,2	nmol/l
	Progesterone – females (luteal phase)	13,1	46,3	nmol/l
	Progesterone – females (postmenopausal)	<0,2	0,4	nmol/l
	Estradiol – males	41,4	159	pmol/l
	Estradiol – females (follicular phase)	114	332	pmol/l
	Estradiol – females (ovulation phase)	222	1959	pmol/l
	Estradiol – females (luteal phase)	222	854	pmol/l
	Estradiol – females (postmenopausal)	<18,4	505	pmol/l
	Estradiol – females (1. trimester)	563	11902	pmol/l

	Estradiol – females (2. trimester)	5729	78098	pmol/l
	Estradiol – females (3. trimester)	31287	>110100	pmol/l
	Testosterone – males (20-49 years)	8,6	29	nmol/l
	Testosterone – males (over 49 years)	6,7	25,7	nmol/l
	Testosterone – females (20-49 years)	0,3	1,7	nmol/l
	Testosterone – females (over 49 years)	0,1	1,4	nmol/l
	Prolactin – males	86	324	mIU/l
	Prolactin - females	102	496	mIU/l
Tumour markers				
	CEA		< 3,8	µg/l
	AFP		< 7	µg/l
	CA 125		< 35	kU/l
	HE 4 - premenopausal state		< 70	pmol/l
	HE 4 - postmenopausal state		< 140	pmol/l
	ROMA score - premenopausal state (low risk of epithelial ovarian cancer)		< 11,4	%
	ROMA score - postmenopausal state (low risk of epithelial ovarian cancer)		< 29,9	%
	CA 15-3		< 25	kU/l
	CA 19-9		< 27	kU/l
	CA 72-4		< 6,9	kU/l
	PSA		< 3	µg/l
	fPSA/PSA	25	100	%
	β-HCG – males	0	2,6	IU/l
	β-HCG – females (premenopausal state)	0	5,3	IU/l
	β-HCG – females (postmenopausal state)	0	8,3	IU/l
	β ₂ -microglobulin	0,97	2,64	mg/l
Serological diagnosis of infectious diseases				
	anti-HAV-IgM		qualitative	
	anti-HAV total		qualitative	
	HBsAg		qualitative	
	HBeAg		qualitative	
	anti-HBe		qualitative	
	anti-HBc-Total		qualitative	
	anti-HBc-IgM		qualitative	
	anti-HBs	0	10	IU/l
	anti-HCV		qualitative	
	Syphilis		qualitative	
	HIV Ab/Ag Combo		qualitative	
	anti CMV-IgG	0	0,5	kAU/l

	anti CMV-IgM	0	0,7	IP
Therapeutic drug monitoring				
	Amikacin - before infusion	6,8	13,7	µmol/l
	Amikacin - ½ - 1 hour after i.v. infusion	42,7	59,8	µmol/l
	Gentamicin - before infusion	1,1	4,2	µmol/l
	Gentamicin - ½ - 1 hour after i.v. infusion	10,4	20,9	µmol/l
	Vancomycin - before infusion	6,9	10	µmol/l
	Vancomycin - ½ - 1 hour after i.v. infusion	13,4	26,8	µmol/l
	Digoxin	0,64	1,54	nmol/l
	Cyclosporine	30	2000	µg/l
	Tacrolimus	4	10	µg/l
	Mycophenolic acid	1,2	3,5	mg/l
	Sirolimus	4,5	14	µg/l
	Everolimus	5	15	µg/l
Other analytes				
	Ammonia	18	72	µmol/l
	Homocysteine - males	5,46	16,20	µmol/l
	Homocysteine - females	4,44	13,56	µmol/l
	Cortisol, sample drawn in 6:00 - 10:00	166	507	nmol/l
	Cortisol, sample drawn in 16:00 - 20:00	74	291	nmol/l
	Folic acid	8,8	60,8	nmol/l
	Vitamin B12 - active (holotranscobalamin)	25,1	165	pmol/l
	25-OH vitamin D	75	250	nmol/l
	1,25 di-OH vitamin D	47,8	190,3	pmol/l
	ACTH	1,6	13,9	pmol/l
	Renin	2,64	27,66	ng/l
	Aldosterone	61	978	pmol/l
	FGF23	23,2	95,4	ng/l
	ELF score - hepatic fibrosis (none to mild fibrotic changes)		<7,7	1/1

Serum	Plasma (Li heparin)	Plasma (K3EDTA)	Plasma (NaF,EDTA)	Urine
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Reference ranges of analytes in urine and stool in adults

Urine chemistry (quantitative)				
	Sodium - 24h excretion	120	240	mmol/day
	Potassium - 24h excretion	35	125	mmol/day
	Chloride - 24h excretion	120	240	mmol/day

	Calcium - 24h excretion	2,5	7,5	mmol/day
	Phosphorus inorganic - 24h excretion	12,9	42,0	mmol/day
	Creatinine - 24h excretion males	10,0	16,0	mmol/day
	Creatinine - 24h excretion females	8,0	14,0	mmol/day
	Urea - 24h excretion	338	585	mmol/day
	Uric acid - 24h excretion	1,5	4,4	mmol/day
	Proteins - 24h excretion		< 0,15	g/day
	Albuminuria - 24h excretion	0	29,9	mg/day
	Albumin/Creatinine (ACR) - morning sample		< 3,0	g/mol
	Osmolality - 24h excretion	600	1200	mmol/day
	Glucose	0,1	0,8	mmol/l
	Proteins morning sample	0,068	0,149	g/l
	Protein / creatinine (PCR) - morning sample	0	14,9	g/mol
	Osmolality	300	1000	mmol/kg
	Amylase		< 7,5	μkat/l
	β ₂ -microglobulin	0,098	0,32	mg/l
	β ₂ -microglobulin / creatinine - morning sample	0	27	mg/mol
Urine sediment + chemistry (disptick)				
	pH	4,5	6	
	Specific gravity	1,015	1,030	kg/m ³
	Urine chemistry (disptick)	semiquantitative		
	Urine sediment - erythrocytes		< 5	/μl
	Urine sediment - leucocytes		< 10	/μl
	Urine sediment - hyaline casts		< 2	/μl
	Urine sediment - pathological casts		< 1	/μl
	Other epithelial cells		< 4	/μl
	Squamous epithelial cells		< 20	/μl
	Hamburger sediment - erythrocytes		< 35	/s
	Hamburger sediment - leucocytes		< 70	/s
	Hamburger sediment - casts		< 1	/s
Fecal occult bleeding				
	Fecal occult bleeding (FOB) quantitative	0	8,5	μg/g

Serum	Plasma (Li heparin)	Plasma (K3EDTA)	Plasma (NaF,EDTA)	Urine
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Acid – base balance and blood gases

Acid – base balance				
	Arterial and capillary blood:			
	O2 saturation	0,95	0,99	
	pO2	11,10	14,40	kPa
	pH	7,36	7,44	
	BE	-2,5	+2,5	mmol/l
	pCO2	4,8	5,9	kPa
	HCO3	22	26	mmol/l
	Lactate	0,3	0,8	mmol/l
	Venous blood:			
	O2 saturation	0,58	0,85	
	pO2	3,59	5,32	kPa
	pH	7,32	7,41	
	BE	-2,5	+2,5	mmol/l
	pCO2	5,45	6,78	kPa
	HCO3	22	26	mmol/l
	Lactate	0,3	1,5	mmol/l
	Mixed venous blood:			
	O2 saturation	0,70	0,80	
	pO2	4,00	6,00	kPa
	pH	7,35	7,43	
	BE	-2,5	+2,5	mmol/l
	pCO2	5,2	6,70	kPa
	HCO3	22	26	mmol/l
	Lactate	0,3	1,5	mmol/l
Other analytes				
	Calcium ionised	1,15	1,29	mmol/l
	3-OH-butyrate	0,0	0,6	mmol/l
	Central veno-venous hemodialysis:			
	Calcium - ionised	0,20	0,34	mmol/l