

Permissible Ranges

Version: 08.2020 SI-units



Clinical Chemistry	
Analyte	Permissible Range
Acid Phosphatase	± 23% > 4 U/l; ± 0,9 U/l up to 4 U/l
Albumin	± 20% > 30 g/l; ± 6 g/l up to 30 g/l
ALP Alkaline phosphatase	± 22% > 80 U/l; ± 18 U/l up to 80 U/l
ALT/ GPT Alanine Aminotransferase	± 25% > 40 U/l; ± 10 U/l up to 40 U/l
Amylase	± 25% > 100 U/l; ± 25 U/l up to 100 U/l
AST/GOT Asparate Aminotransferase	± 21% > 40 U/l; ± 8 U/l up to 40 U/l
Bilirubin, direct	± 22% > 20 µmol/l; ± 4,4 µmol/l up to 20 µmol/l
Bilirubin, total	± 22% > 20 µmol/l; ± 4,4 µmol/l up to 20 µmol/l
Calcium	± 10% > 2,5 mmol/l; ± 0,25 mmol/l up to 2,5 mmol/l
Calcium (ionized)	± 9% > 1 mmol/l; ± 0,09 mmol/l up to 1 mmol/l
CHE Cholinesterase	± 23% > 5000 U/l; ± 1150 U/l up to 5000 U/l
Chloride	± 8% > 100 mmol/l; ± 8 mmol/l up to 100 mmol/l
Cholesterol	± 13% > 5 mmol/l; ± 0,65 mmol/l up to 5 mmol/l
CK Creatinkinase	± 15% > 100 U/l; ± 15 U/l up to 100 U/l
Copper	± 36%
Creatinine	± 19% > 100 µmol/l; ± 19 µmol/l up to 100 µmol/l
Gamma GT	± 21% > 40 U/l; ± 8,4 U/l up to 40 U/l
Glucose	± 15% > 5 mmol/l; ± 0,75 mmol/l up to 5 mmol/l
HDL Cholesterol	± 20% > 0,8 mmol/l; ± 0,16 mmol/l up to 0,8 mmol/l
Iron	± 24% > 25 µmol/l; ± 6 µmol/l up to 25 µmol/l
Lactate	± 18% > 4 mmol/l; ± 0,72 mmol/l up to 4 mmol/l
LDH Lactate Dehydrogenase	± 18% > 250 U/l; ± 45 U/l up to 250 U/l
LDL Cholesterol	± 20% > 2 mmol/l; ± 0,4 mmol/l up to 2 mmol/l
Lipase	± 27% > 60 U/l; ± 16 U/l up to 60 U/l
Lithium	± 19% > 2 mmol/l; 0,38 mmol/l up to 2 mmol/l
Magnesium	± 13% > 1,25 mmol/l; ± 0,163 mmol/l up to 1,25 mmol/l
Osmolality	± 5% > 300 mosm/kg; ± 15 mosm/kg up to 300 mosm/kg
Pancreatic Amylase	± 26% > 25 U/l; ± 6,3 U/l up to 25 U/l
Phosphate	± 16% > 0,75 mmol/l; ± 0,12 mmol/l up to 0,75 mmol/l
Potassium	± 8% > 4 mmol/l; ± 0,32 mmol/l up to 4 mmol/l

Clinical Chemistry	
Analyte	Permissible Range
Sodium	± 5% > 150 mmol/l; ± 7,5 mmol/l up to 150 mmol/l
TIBC Total Iron Binding Capacity	± 18% > 25 µmol/l; ± 4,5 µmol/l up to 25 µmol/l
Total protein	± 10% > 60g/l; ± 6 g/l up to 60 g/l
Triglycerides	± 16% > 1,6 mmol/l; ± 0,26 mmol/l up to 1,6 mmol/l
Urea	± 20% > 4 mmol/l; ± 0,8 mmol/l up to 4 mmol/l
Uric acid	± 13% > 300 µmol/l; ± 39 µmol/l up to 300 µmol/l
Zinc	± 36%

Urine Chemistry	
Analyte	Permissible Range
Albumin	± 26% > 20 mg/l; ± 5,2 mg/l up to 20 mg/l
Amylase	± 25% > 100 U/l; ± 25 U/l up to 100 U/l
Calcium	± 17% > 1,5 mmol/l; ± 0,26 mmol/l up to 1,5 mmol/l
Chloride	± 22% > 20 mmol/l; ± 4,4 mmol/l up to 20 mmol/l
Creatinine	± 21% > 5 mmol/l; ± 1,05 mmol/l up to 5 mmol/l
Glucose	± 22% > 0,5 mmol/l; ± 0,11 mmol/l up to 0,5 mmol/l
Magnesium	± 17% > 3 mmol/l; ± 0,51 mmol/l up to 3 mmol/l
Phosphate	± 20% > 10 mmol/l; ± 2 mmol/l up to 10 mmol/l
Potassium	± 15% > 50 mmol/l; ± 7,5 mmol/l up to 50 mmol/l
Sodium	± 12% > 50 mmol/l; ± 6 mmol/l up to 50 mmol/l
Total protein	± 24% > 500 mg/l; ± 120 mg/l up to 500 mg/l
Urea	± 17% > 200 mmol/l; ± 34 mmol/l up to 200 mmol/l
Uric acid	± 22% > 1000 µmol/l; ± 220 µmol/l up to 1000 µmol/l

Cardiac Marker	
Analyte	Permissible Range
BNP	± 25% > 100 ng/l; ± 25 ng/l up to 100 ng/l
CK-MB (Activity)	± 25% > 15 U/l; ± 3,75 U/l up to 15 U/l
CK-MB (Mass)	± 25% > 15 ng/ml; ± 3,75 ng/ml up to 15 ng/ml

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Cardiac Marker	
Analyte	Permissible Range
Homocystein	$\pm 25\% > 15 \mu\text{mol/l}$; $\pm 3,75 \mu\text{mol/l}$ up to $15 \mu\text{mol/l}$
Myoglobin	$\pm 16\% > 100 \text{ ng/ml}$; $\pm 16 \text{ ng/ml}$ up to 100 ng/ml
NT-proBNP	$\pm 25\% > 125 \text{ pg/ml}$; $\pm 32 \text{ pg/ml}$ up to 125 pg/ml
Troponin I	$\pm 33\% > 20 \text{ ng/l}$; $\pm 6,6 \text{ ng/l}$ up to 20 ng/l
Troponin T	$\pm 33\% > 20 \text{ ng/l}$; $\pm 6,6 \text{ ng/l}$ up to 20 ng/l

Glycated Hemoglobin	
Analyte	Permissible Range
HbA1c	$\pm 14\% > 30 \text{ mmol/mol}$; $\pm 4,2 \text{ mmol/mol}$ up to 30 mmol/mol
Hemoglobin	$\pm 12\% > 100 \text{ g/l}$; $\pm 12 \text{ g/l}$ up to 100 g/l

Blood Gas and Electrolytes	
Analyte	Permissible Range
pH	$\pm 0,8\%$
pCO ₂	$\pm 12\%$
pO ₂	$\pm 12\% \geq 125 \text{ mmHg}$, $\pm 18\% < 125 \text{ mmHg}$
Sodium	$\pm 5\% > 150 \text{ mmol/l}$; $\pm 7,5 \text{ mmol/l}$ up to 150 mmol/l
Potassium	$\pm 8\% > 4 \text{ mmol/l}$; $\pm 0,32 \text{ mmol/l}$ up to 4 mmol/l
Calcium	$\pm 9\% > 1 \text{ mmol/l}$; $\pm 0,09 \text{ mmol/l}$ up to 1 mmol/l
Chloride	$\pm 8\% > 100 \text{ mmol/l}$; $\pm 8 \text{ mmol/l}$ up to 100 mmol/l
Glucose	$\pm 15\% > 5 \text{ mmol/l}$; $\pm 0,75 \text{ mmol/l}$ up to 5 mmol/l
Lactate	$\pm 18\% > 4 \text{ mmol/l}$; $\pm 0,72 \text{ mmol/l}$ up to 4 mmol/l
Magnesium	$\pm 13\% > 1,25 \text{ mmol/l}$; $\pm 0,163 \text{ mmol/l}$ up to $1,25 \text{ mmol/l}$
Urea	$\pm 20\% > 4 \text{ mmol/l}$; $\pm 0,8 \text{ mmol/l}$ up to 4 mmol/l

Hemogram	
Analyte	Permissible Range
BAS (%)	$\pm 54\% > 1,5$; $\pm 0,81 < 1,5$
BAS	$\pm 54\% > 0,1 \times 10^9/\text{l}$; $\pm 0,81 < 1,5 \times 10^9/\text{l}$

Hemogram	
Analyte	Permissible Range
EOS (%)	$\pm 54\% > 7$; $\pm 3,8 < 7$
EOS	$\pm 54\% > 0,5 \times 10^9/\text{l}$; $\pm 0,27 < 1,5 \times 10^9/\text{l}$
HGB	$\pm 6\%$
HCT	$\pm 12\%$
LYMPH (%)	$\pm 54\% > 40$; $\pm 22 < 40$
LYMPH	$\pm 54\% > 3,5 \times 10^9/\text{l}$; $\pm 1,9 < 3,5 \times 10^9/\text{l}$
MCH	$\pm 9\%$
MCHC	$\pm 7\%$
MCV	$\pm 10\%$
MONO (%)	$\pm 54\% > 12$; $\pm 6,5 < 12$
MONO	$\pm 54\% > 0,8 \times 10^9/\text{l}$; $\pm 0,43 < 0,8 \times 10^9/\text{l}$
MPV	$\pm 13\%$
NEUT (%)	$\pm 54\% > 40 \pm 22 < 40$
NEUT	$\pm 54\% > 7,0 \times 10^9/\text{l}$; $\pm 3,8 < 7,0 \times 10^9/\text{l}$
PLT	$\pm 13\% > 300 \times 10^{12}/\mu\text{l}$; $\pm 15\%$ between 150 and $300 \times 10^{12}/\mu\text{l}$; $\pm 18\% < 150 \times 10^{12}/\mu\text{l}$
RBC	$\pm 8\% > 4 \times 10^{12}/\text{l}$; $\pm 0,3 \times 10^{12}/\text{l}$ up to $4 \times 10^{12}/\text{l}$
WBC	$\pm 18\% > 4 \times 10^9/\text{l}$; $\pm 0,7 \times 10^9/\text{l}$ up to $4 \times 10^9/\text{l}$
RDW	$\pm 1,5$

Erythrocyte Sedimentation Rate	
Analyte	Permissible Range
ESR	$\pm 40\% > 20 \text{ mm/h}$; $\pm 8 \text{ mm/h}$ up to 20 mm/h

Coagulation	
Analyte	Permissible Range
PT (prothrombin time) (Quick; %)	$\pm 23\% > 50\%$; $\pm 12\%$ up to 50%
PT (prothrombin time) (INR)	$\pm 23\% > 0,5$; $\pm 0,12$ up to $0,5$
PT (prothrombin time) (s)	$\pm 23\% > 10 \text{ s}$; $2,3 \text{ s}$ up to 10 s
aPTT	$\pm 18\%$
Fibrinogen	$\pm 17\% > 2 \text{ g/l}$; $\pm 0,34 \text{ g/l}$ up to 2 g/l

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Coagulation	
Analyte	Permissible Range
Antithrombin III (%)	± 16% > 50%; ± 8 % up to 50%
Antithrombin III	± 16% > 100 mg/l; ± 16 mg/l up to 100 mg/l
D-Dimer (mg/l)	± 31% > 1 mg/l; 0,31 mg/l up to 1mg/l
D-Dimer (FEU mg/l)	± 31% > 1 FEU mg/l; 0,31 FEU mg/l up to 1 FEU mg/l
Protein C	± 19% > 20%; ± 4% up to 20%
Protein S	± 20% > 20%; ± 4% up to 20%

Ethanol	
Analyte	Permissible Range
Ethanol	± 12% > 0,6 g/l; ± 0,07 g/l up to 0,6 g/l
Ammoniak	± 30%

Hepatitis B Virus	
Analyte	Permissible Range
HBsAg	± 30 % > 1 IU/ml; ± 0,3 IU/ml up to 1 IU/ml

Hormone	
Analyte	Permissible Range
Aldosterone	± 27% > 160 pmol/l; ± 43 pmol/l up to 160 pmol/l
AMH	± 32% > 1 ng/ml; ± 0,32 ng/ml up to 1 ng/ml
Androstendione	± 38% > 1 ng/ml; ± 0,38 ng/ml up to 1 ng/ml
Calcitonin	± 18% > 5 pg/ml; ± 0,9 pg/ml up to 5 pg/ml
Cortisol	± 28% > 140 nmol/l; ± 39 nmol/l up to 140 nmol/l
C-Peptide	± 21% > 0,3 nmol/l; ± 0,06 nmol/l up to 0,3 nmol/l
DHEA-S	± 34% > 5 µmol/l; ± 1,7 µmol/l up to 5 µmol/l
Estradiol	± 34% > 100 pmol/l; ± 34 pmol/l up to 100 pmol/l
Ferritin	± 25 % > 30 µg/l; ± 7,5 µg/l up to 30 µg/l
Folat	± 28 % > 4 nmol/l; ± 1,12 nmol/l up to 4 nmol/l
FSH	± 21% > 10 IU/l; ± 2,1 IU/l up to 10 IU/l

Hormone	
Analyte	Permissible Range
hCG	± 30% > 10 IU/l; ± 3,0 IU/l up to 10 IU/l
Human growth hormone	± 30% > 3 ng/ml; 0,9 ng/ml up to 3 ng/ml
IgE	± 30% > 100 IU/ml; 30 IU/ml up to 100 IU/ml
Insulin	± 30% > 15 pmol/l; ± 4,5 pmol/l up to 15 pmol/l
LH (Luteinizing Hormone)	± 30% > 10 mIU/ml; ± 3,0 mIU/ml up to 10 mIU/ml
17-OH Progestrone	± 29%
Progesterone	± 29% > 10 nmol/l; ± 2,9 nmol/l up to 10 nmol/l
Prolactin	± 30% > 100 mIU/l ; ± 30 mIU/l up to 100 mIU/l
PTH	± 26% > 65 ng/l; ± 17 ng/l up to 65 ng/l
SHBG	± 29% > 10 nmol/l; ± 2,9 nmol/l up to 10 nmol/l
T3, free	± 17% > 4 pmol/l; ± 0,7 pmol/l up to 4 pmol/l
T3, total	± 22% > 1,2 nmol/l; ± 0,26 nmol/l up to 1,2 nmol/l
T4, free	± 17% > 10 pmol/l; ± 1,7 pmol/l up to 10 pmol/l
T4, total	± 20 % > 80 nmol/l; ± 16 nmol/l up to 80 nmol/l
Testosterone	± 25% > 8 nmol/l; ± 2 nmol/l up to 8 nmol/l
Thyreoglobulin	± 12 % > 1,7 µg/l; ± 0,2 µg/l up to 1,7 µg/l
TSH	± 24% > 0,5 mU/l; ± 0,12 mU/l up to 0,5 mU/l
Vitamin B12	± 27% > 150 nmol/l; ± 41 nmol/l up to 150 nmol/l
Vitamin D	± 20% > 60 nmol/l; ± 12 nmol/l up to 60 nmol/l

Specific Proteins	
Analyte	Permissible Range
Albumin	± 15% > 30 g/l; ± 4,5 g/l up to 30 g/l
Alpha-1-acid-glycoprotein	± 21% > 1 g/l; ± 0,21 g/l up to 1 g/l
Alpha-1-antitrypsin	± 19% > 1 g/l; ± 0,19 g/l up to 1 g/l
Alpha-2-macroglobulin	± 21% > 3 g/l; ± 0,6 g/l up to 3 g/l
ASO (Anti-streptolysin O)	± 20% > 100 IU/ml; 20 IU/ml up to 100 IU/ml
Beta-2-microglobulin	± 22% > 1 mg/l; 0,22 mg/l up to 1 mg/l
C3	± 19% > 1 g/l; ± 0,19 g/l up to 1 g/l
C4	± 26% > 0,1 g/l; ± 0,026 g/l up to 0,1 g/l

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Specific Proteins	
Analyte	Permissible Range
Ceruloplasmin	± 18% > 0,25 g/l; ± 0,05 g/l up to 0,25 g/l
CRP (C-Reactive-Protein)	± 20% > 2 mg/l; ± 0,4 mg/l up to 2 mg/l
Haptoglobin	± 29% > 0,5 g/l; ± 0,15 g/l up to 0,5 g/l
IgM	± 26% > 1 g/l; ± 0,26 g/l up to 1 g/l
Kappa Light Chain	± 23% > 1,5 g/l; ± 0,35 g/l up to 1,5 g/l
Lambda Light Chain	± 22% > 1 g/l; ± 0,22 g/l up to 1 g/l
Prealbumin	± 19% > 0,2 g/l; ± 0,04 g/l up to 0,2 g/l
RF	± 20% > 100 kU/l; ± 20 kU/l up to 100 kU/l
Transferrin	± 18% > 2 g/l; ± 0,4 g/l up to 2 g/l
IgA	± 20% > 1 g/l; ± 0,2 g/l up to 1 g/l
IgE	± 30% > 100 IU/ml; ± 30 IU/ml up to 100 IU/ml
IgG	± 18% > 10 g/l; ± 1,8 g/l up to 10 g/l

Therapeutic Drugs	
Analyte	Permissible Range
Amikacin	± 20% > 20 mg/l; ± 4 mg/l up to 20 mg/l
Carbamazepine	± 22% > 4 mg/l; ± 0,88 mg/l up to 4 mg/l
Chinidine	± 20% > 2 mg/l; ± 0,4 mg/l up to 2 mg/l
Chlor-amphenicol	± 20% > 15 mg/l; ± 3 mg/l up to 15 mg/l
Digoxin	± 22% > 0,6 µg/l; ± 0,13 µg/l up to 0,6 µg/l
Disopyramide	± 20% > 2 µg/ml; ± 0,4 µg/ml up to 2 µg/ml
Ethosuximide	± 20% > 40 mg/l; ± 8 mg/l up to 40 mg/l
Gentamicin	± 20% > 5 mg/l; ± 1 mg/l up to 5 mg/l
Lidocain	± 20% > 1,5 mg/l; ± 0,3 mg/l up to 1,5 mg/l
NAPA	± 20% > 4 mg/l; ± 0,8 mg/l up to 4 mg/l
Paracetamol	± 20% > 10 µg/ml; ± 2 µg/ml up to 10 µg/ml
Phenobarbital	± 20% > 10 mg/l; ± 2 mg/l up to 10 mg/l
Phenytoin	± 20% > 10 mg/l; ± 2 mg/l up to 10 mg/l
Primidone	± 20% > 5 mg/l; ± 1 mg/l up to 5 mg/l
Procainamide	± 20% > 4 µg/ml; ± 0,8 µg/ml up to 4 µg/ml
Salicylate	± 20% > 30 µg/ml; ± 6 µg/ml up to 30 µg/ml

Therapeutic Drugs	
Analyte	Permissible Range
Theophylline	± 22% > 3 mg/l; ± 0,66 mg/l up to 3 mg/l
Tobramycin	± 20% > 5 mg/l; ± 1 mg/l up to 5 mg/l
Valproic Acid	± 20% > 50 mg/l; ± 10 mg/l up to 50 mg/l
Vancomycin	± 20% > 5 mg/l; ± 1 mg/l up to 5 mg/l

Tumor Marker	
Analyte	Permissible Range
AFP (α1-Fetoprotein)	± 24% > 10 kIU/l; ± 2,4 kIU/l up to 10 kIU/l
CA19-9	± 24% > 40 kU/l; ± 9,6 kU/l up to 40 kU/l
CA 125	± 24% > 35 kU/l; ± 8,4 kU/l up to 35 kU/l
CA 15-3	± 24% > 40 kU/l; ± 9,6 kU/l up to 40 kU/l
CEA	± 25% > 3 µg/l; ± 0,75 up to 3 µg/l
Ferritin	± 25% > 30 µg/l; ± 7,5 µg/l up to 30 µg/l
PSA free	± 24% > 1 µg/l; ± 0,24 up to 1 µg/l
PSA, total	± 25% > 3 µg/l ; ± 0,75 µg/l up to 3 µg/l