

- Glucose
- Glucose + O₂ $\xrightarrow{\text{GOD}}$ Gluconic Acid + H₂O₂
 - H₂O₂ + Phenol + 4-aminoantipyrine $\xrightarrow{\text{POD}}$ Red Quinone Dye + H₂O
- 70-110, 100-140
110-126,
140-200
126, 7200
- ↑ - HyperA of adrenal, Stress, mild Exercise
↓ - Tumor of P cell, hypofA, starvation, absorption, severe exercise
- Total Protein [6-8g/dl]
- Total protein + Cu $\xrightarrow{\text{Alkaline}}$ Cu-Na-Biuret (violet) complex
- ↑ - Collagen disease, multiple myeloma, Macroglobulinemia, Dehydration
↓ - PEM, ↓ intake, nephrotic sd, liver ds, chronic infection, untreated DM, overhyd, hypert
- Albumin [3.7-5.3 g/dl]
- Albumin + BCG $\xrightarrow{\text{acidic}}$ Albumin - BCG complex
- ↑ - Tissue damage, Inflamm, DetM, shock, malignancy
↓ - malN, liver ds, Nephrotic, hypert, Untreated DM, Plasma dilution
- Creatinine [mu-mol/dl, m - 0.7-1.4 mg/dl, F - 0.5-1.0 mg/dl]
- Creatinine + Picric Acid $\xrightarrow{\text{Alkaline}}$ Creatinine Picrate
- ↑ - Renal failure, muscular dystrophy, foliol (Early stage)
↓ - muscle wasting (Later stage)
- Urea [23-30 g/dl]
- Urea + H₂O $\xrightarrow{\text{Urease}}$ NH₃ + CO₂
 - NH₃ + Phenol + Hypochlorite $\xrightarrow{\text{NitroP}}$ Blue-Green (Indophenol)
- ↑ - O failure, shock, hemorrhage / (Pre-Renal)
DetM (Vomiting, Diarrhea)
- Acute Glomerulon, Nephrosis, Renal TB (Renal)
- Prostate↑, stone, Bladder tumor (Post-renal)
- Lactic Acid [2.5-7 mg/dl]
- Lactic Acid + H₂O + O₂ $\xrightarrow{\text{Unspec}}$ Allantoin + CO₂ + H₂O
 - 2H₂O₂ + 4AP + DCPS $\xrightarrow{\text{POD}}$ Quinonemine + H₂O
- ↑ - α-PRPP synthetase↑, MGPTase↓, G6PD↓
↓ - Cancer, Psoriasis
↓ - Renal failure, Lactic Acidosis

Cholesterol [$<200 \text{ mg/dL}$, $<180 \text{ mg/dL}$]

- $\text{CE} + \text{H}_2\text{O} \xrightarrow{\text{esterase}} \text{Cholesterol FFA}$
- $\text{C} + \text{O}_2 \xrightarrow{\text{oxidase}} \text{Cholestanone} + \text{H}_2\text{O}$
- $\text{H}_2\text{O}_2 + 4\text{-aminocantipyrine} \xrightarrow{\text{POD}} \text{Quinonemine H}_2\text{O}$
dye
+ Phenol

→ ↑ - Hypot, DM, Obstructive Jaundice, Nephrotic wasting
↓ - Hyper T, Anemia, Hemolytic Jaundice, Malabsorption,

Phosphorus [Fiske Subbarow, 2.4-4.5 mg/dL]

- $\text{P} + \text{Ammonium} \rightarrow \text{Ammonium} \xrightarrow{\text{aminomethyl}} \text{molybdenum blue}$
molybdate phosphomolybdate sulfuric acid

→ ↑ - Hypop, Renal failure, Hemolysis, Vitamin D intoxication
↓ - Hyper P, osteomalacia, rickets, Diet & (Fanconi)

— X — X —

→ protein - Esbach Test, Yellow ppt.
- Renal failure, Nephrotic, stone, UTI

→ Reducing Sugar - Benedict, Smibr + Edu → Boil 2-300°C (Cu, Ti, O, R)
- DM, Fanconi, Lactating mothers, Fructose Intolerance, Galactosemia, Cherry Plum

BR - CuSO_4 , Na_2CO_3 , Sodium Citrate

Abnormal Urine

→ Ketone Bodies - Rotner's (Purple ring)

Smibr + s. (NH₄)₂SO₄ + 0.5M sodium nitroprusside + Na_2O_2

— Uncontrolled DM, Starvation, Toxemia of pregnancy, high fat low carb

→ Bile Salt - May's sulphur
— Dry sulphur, ash-like, zinc

Bluegreen

↑
→ Blood Pigment - Benzidine, 2d Bt + 2mU, 4d H_2O_2
— Renal Stone, Acute Glomerulon, Trauma of kidney
— SICKLE CELL A, Malignant Hypert, Polycystic kidney Disease