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FEAT URES

- **Use**: Normalization of Urine Volume
- **Species**: Species Independent
- **Calibrated**: NIST Standard Reference #914a
- **Samples/Kit**: 88 or 472 in Duplicate
- **Stability**: Liquid 4°C Stable Reagents
- **Readout**: Colorimetric, 490 nm

SCIENTIFIC RELEVANCE

Creatinine (2-amino-1-methyl-5H-imadazol-4-one) is a metabolite of phosphocreatine (p-creatine), a molecule used as a store for high-energy phosphate that can be utilized by tissues for the production of ATP. Creatine and p-creatine are converted non-enzymatically to the metabolite creatinine, which diffuses into the blood and is excreted by the kidneys. Its formation occurs at a rate that is relatively constant and intra-individual variation is <15% from day to day. Under normal conditions creatinine is a useful tool for normalizing the levels of other molecules found in urine.
DetectX®

**Hemoglobin Colorimetric Detection Kits**

Regular Catalog No: K013-H1 (2 Plate)
High Sensitivity Catalog No: K013-HX1 (2 Plate)  K013-HX5 (10 Plate)

**FEATURES**
- **Sample Type**
  - K013-H: Whole Blood, RBC’s
  - K013-HX: Serum, Plasma
- **Time to Answer** 30 Minutes
- **Range**
  - K013-H: 16-0.25 g/dL
  - K013-HX: 20-0.313 µg/mL
- **Samples/Kit** 88 in Duplicate
- **Stable**
  - Liquid 4°C Stable Reagents
- **Readout**
  - K013-H: 560-580 nm
  - K013-HX: 450 nm

**SCIENTIFIC RELEVANCE**
Hemoglobin (Hgb) is an erythrocyte protein complex comprised of two sets of identical pairs of subunits, each of which bind an iron-porphyrin group commonly called heme. Heme binds and releases oxygen or carbon dioxide in response to slight changes in local gas tension. Hemoglobin values are associated with a variety of conditions ranging from anemias (low Hgb), erythrocytosis (high Hgb), thalassemias (aberrant chain synthesis), and sickling disorders (abnormal complex shape).

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**DetecX®**

**BCA Protein Dual Range Colorimetric Detection Kit**

Catalog No: K041-H1 (2 Plate)

**FEATURES**
- **Use** Measure Total Protein Content
- **Sample Type** Cell Lysates, Urine, Serum, Plasma, and Tissue Homogenates
- **Samples/Kit** 89 in Duplicate
- **Sensitivity** 1.68 µg/mL
- **Stable** Liquid Reagents, Stable at Room Temperature
- **Readout** Colorimetric, 560 nm

**SCIENTIFIC RELEVANCE**
Protein determination is one of the most common operations performed in biochemical research. The principle of the bicinchoninic acid (BCA) assay is similar to the Lowry assay, and relies on the formation of a Cu²⁺-protein complex under alkaline conditions, followed by reduction of the Cu²⁺ to Cu⁺. The amount of reduction is proportional to protein present. It has been shown that cysteine, cystine, tryptophan, tyrosine, and peptide bonds are able to reduce Cu²⁺ to Cu⁺. BCA forms a purple-blue complex with Cu⁺ in alkaline environments, thus providing a basis to monitor the reduction of alkaline Cu²⁺ by proteins.

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**WEB INSERT 181019**
DetectX®

Thiol Fluorescent Detection Kit

Catalog No: K005-F1 (1 Plate)

FEATURES
- Use: Measure Thiol Content of Recombinant Proteins and Peptides
- Adaptable: Measure SH easily in 8M GuHCl Buffers
- Time to Answer: 30 Minutes
- Stability: Liquid 4°C Stable Reagents
- Readout: Fluorescent, 510 nM

SCIENTIFIC RELEVANCE
Free thiols in biological systems have important roles. Oxidatively-modified thiol groups of cysteine residues are known to modulate the activity of a growing number of proteins. One of the most pressing problems is to accurately determine the extent of modification of specific amino acids, such as cysteine residues. This is especially difficult in a complex protein sample, especially in the presence of chaotropic agents such as guanidine hydrochloride. Typical methods using Ellman’s reagent do not have sufficient sensitivity to allow economical detection of free SH groups.

![Graph showing the relationship between N-Acetyl Cysteine Concentration (nM) and Net FLU.](image)

DetectX®

Urea Nitrogen (BUN) Detection Kit

Catalog No: K024-H1 (2 Plate) K024-H5 (10 Plate)

FEATURES
- Use: Measure Urea Nitrogen
- Sample Type: Serum, Plasma, Urine, and Saliva
- Time to Answer: 30 Minutes
- Calibrated: NIST Standard Reference #912a
- Sample/Kit: 88 or 472 in Duplicate
- Readout: Colorimetric, 450 nm

SCIENTIFIC RELEVANCE
Urea is a by-product of protein metabolism by the liver, and is removed from the blood by the kidneys. Urea freely filters through the glomerulus, but is reabsorbed by the renal tubules in a flow-dependent fashion. The higher the flow rate, the greater amount of urea nitrogen is cleared from circulation and eliminated through the kidneys. As a result, the level of circulating urea nitrogen, along with serum creatinine, serves as a primary measure of kidney function. Normal adult Blood Urea Nitrogen (BUN) levels should be between 7 and 21 mg urea nitrogen per 100 mL blood (mg/dL). Azotemia, poor kidney function, will cause elevated BUN levels (≥ 50 mg/dL) and is associated with acute kidney failure or injury, severe acute pancreatitis, congestive heart failure or gastrointestinal bleeding. Azotemia also can occur with dehydration, as a result of alcohol abuse, or high protein diets. Lower than expected BUN levels are usually not clinically predictive, but are primarily associated with liver disease or malnutrition, including malabsorption and low protein diets. Urine and saliva are considered to be acceptable non-invasive samples for measurement of urea nitrogen.

![Graph showing the relationship between Urea Nitrogen Concentration (mg/dL) and Net OD.](image)