Datasheet for ABIN577638

Urinary Creatinine Detection Kit

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Overview

Quantity:	2 x 96 tests
Target:	Creatinine (CR)
Reactivity:	Dog, Monkey
Minimum Detection Limit:	0.037 mg/dL
Application:	Biochemical Assay (BCA)

Product Details

Purpose:	The DetectX® Urinary Creatinine kit is designed to quantitatively measure creatinine present inurine samples.
Brand:	DetectX®
Sample Type:	Urine
Detection Method:	Colorimetric
Specificity:	Species Independent. Validated samples: Human, Monkey, Dog, and Rat Urine. This assay has been validated for human, rat, dog and monkey urine samples. Urine samples containing visible protein or particulates should be centrifuged or filtered prior to using. Mouse urine samples are not compatible with the use of this assay to determine GFR as over half of murine urinary creatinine is from renal secretion rather than filtration
Sensitivity:	0.19 µg/mL
Characteristics:	The Creatinine kits are designed to quantitatively measure creatinine in urine samples. A NIST calibrated creatinine standard is used to standardize the assay. Samples are pipetted into a clear microtiter plate and the color generating reaction is initiated with the supplied no-mix

Product Details

	DetectX Creatinine Reagent, which is pipetted into each well. After a 30 minute incubation at room temperature the color is read at 490nm. 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 either comes from the diet or synthesized from the amino acids arginine, glycine, and methionine. Creatine and p-creatine are converted non-enzymatically to the metabolite creatinine, which diffuses into the blood and is excreted by the kidneys. In vivo, this conversion appears to be irreversible and in vitro it is favored by higher temperatures and lower pH. Creatinine forms spontaneously from p-creatine. Under normal conditions, its formation occurs at a rate that is relatively constant and as intra-individual variation is <15% from day to day, creatinine is a useful tool for normalizing the levels of other molecules found in urine.
Components:	Clear Microtiter Plates Bag containing 2 by 96 well plates or 2 bags each containing 5 by 96 well plates 2 plates 2 or 5 plates Creatinine standard A 100 mg/dL creatinine solution in deionized water. 1 mL or 1 mL Calibrated to NIST Standard Reference Material Lot Number 914a DetectX® Creatinine reagent 20 mL or 50 mL Plate sealers 2 or 10 each
Material not included:	Distilled or deionized water. Colorimetric 96 well microplate reader capable of reading optical density at 490 nm, preferably with correction between 570 and 590 nm. Software for converting raw relative optical density readings from the plate reader and carrying out four parameter logistic curve (4PLC) fitting.

Target Details

Target:	Creatinine (CR)
Alternative Name:	Creatinine (CR Products)
Target Type:	Amino Acid
Background:	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 ATP1. Creatine either comes from the diet or synthesized from the amino acids arginine, glycine, and methionine. This occurs in the kidneys and liver, although other organ systems may be involved and species-specific differences may exist2. Creatine and p-creatine are converted non-enzymatically to the metabolite creatinine, which diffuses into the blood and is excreted by the kidneys. In vivo, this conversion appears to be irreversible and in

Target Details

vitro it is favored by higher temperatures and lower pH 2. Creatinine forms spontaneously from p-creatine3. Under normal conditions, its formation occurs at a rate that is relatively constant and as intra-individual variation is <15 % from day to day, creatinine is a useful tool for normalizing the levels of other molecules found in urine. Additionally altered creatinine levels may be associated with other conditions that result in decreased renal blood flow such as diabetes and cardiovascular disease4-6. 2- Po3 AtP ADP nH nH2 HooC HooC nH nH Creatine Kinase n n Creatine H Phosphocreatine o n nH n Creatinine

Application Details

Application Notes:	This assay has been validated for human, rat, dog and monkey urine samples. Urine samples containing visible protein or particulates should be centrifuged or filtered prior to using. Mouse urine samples are not compatible with the use of this assay to determine GFR as over half of murine urinary creatinine is from renal secretion rather than filtration9. For measuring Creatinine in serum or plasma samples please refer to the DetectX® Serum Creatinine Detection kit,
Comment:	Sample values: 47 random clean catch human urine samples were tested in the assay. Neat urine values ranged from 17.2 to 168.9 mg/dL with an average of 90.7 mg/dL. One sample each of beagle and rat urines diluted 1:20 with water and read in the kit gave creatinine values in neat urine of 92.8 and 25.2 mg/dL respectively. A single Rhesus monkey urine, diluted either 1:2 or 1:5, averaged 2.65 mg/dL in neat urine.
Protocol:	A creatinine standard, calibrated to a NIST creatinine standard, is provided to generate a standard curve for the assay and all samples should be read off the standard curve. Standards or diluted samples are pipetted into a clear microtiter plate. The color generating reaction is initiated with the DetectX® Creatinine Reagent, which is pipetted into each well. After a short incubation the intensity of the generated color is detected in a microtiter plate reader capable of measuring 490nm wavelength. The concentration of the creatine in the sample is calculated, after making a suitable correction for the dilution of the sample, using software available with most plate readers. The Jaffe reaction used in this kit has been modified to read creatinine levels in urine
Reagent Preparation:	Allow the kit reagents to come to room temperature for 30 minutes. Ensure that all samples have reached room temperature and have been diluted as appropriate prior to running them in the kit. standard Preparation Label seven glass test tubes #1 through

	#7. Pipet 800 µL of water into tube #1 and 500 µL into tubes #2-#7. Carefully add 200 µL of the Creatinine Standard stock solution to tube #1 and vortex completely. Take 500 µL of the creatinine solution in tube #1 and add it to tube #2 and vortex completely. Add 500 µL of tube #2 to tube #3 and vortex completely. Repeat these serial dilutions for tubes #4 through #7. The concentration of creatinine in tubes 1 through 7 will be 20, 10, 5, 2.5, 1.25, 0.625 and 0.3125 mg/dL. Water will be used as a sample blank. Use all standards within 2 hours of preparation.
Sample Preparation:	Rhesus monkey urine samples contain very low levels of creatinine and should be diluted 1:2 in water by taking one part of urine and adding to one part of water prior to using in the assay. All other urine samples must be diluted 1:20 with deionized or distilled water by taking one part of urine and adding to nineteen parts of water to obtain accurate results. Any urine samples with creatinine concentrations outside the standard curve range should be diluted further with water to obtain readings within the standard curve. Use all diluted samples within 2 hours of preparation.
Assay Procedure:	We recommend that all standards and samples be run in duplicate to allow the end user to accurately determine creatinine concentrations. 1. Use the plate layout sheet on the back page to aid in proper sample and standard identification. 2. Pipet 50 µL of samples, water as the blank, or standards into wells in the clear plate. 3. Add 100 µL of the DetectX® Creatinine Reagent to each well using a repeater pipet. 4. Gently tap the sides of the plate to ensure adequate mixing of the reagents. Cover the plate with the plate sealer and press to seal adequately. 5. Incubate at room temperature for 30 minutes. 6. Read the optical density generated from each well in a plate reader capable of reading at 490nm. 7. Use the plate reader's built-in 4PLC software capabilities to calculate creatinine concentrations for each sample.
Calculation of Results:	Average the duplicate OD readings for each standard and sample. Create a standard curve by reducing the data using computer software capable of generating a four-parameter logistic curve (4PLC) fit, after subtracting the mean OD's for the blank. The sample concentrations obtained should be multiplied by the dilution factor to obtain neat

Application Details

	sample values.
Restrictions:	For Research Use only

Handling

Precaution of Use:	As with all such products, this kit should only be used by qualified personnel who have had laboratory safety instruction. The complete insert should be read and understood before attempting to use the product. The Creatinine Reagent contains hazardous chemicals. It contains a solution of basic picric acid in a stabilizing solution. The solution should not come in contact with skin or eyes. Picric acid is an irritant and, if dried, potentially explosive. Avoid contact with metals and use large volumes of water during disposal. Take appropriate precautions when handling these reagents.
Storage:	4 °C
Storage Comment:	All components of this kit should be stored at 4°C until the expiration date of the kit.

Publications

Product cited in:	Hansen, Roager, Søndertoft, Gøbel, Kristensen, Vallès-Colomer, Vieira-Silva, Ibrügger, Lind, Mærkedahl, Bahl, Madsen, Havelund, Falony, Tetens, Nielsen, Allin, Frandsen, Hartmann, Holst, Sparholt et al.: "A low-gluten diet induces changes in the intestinal microbiome of healthy Danish adults. ..." in: **Nature communications**, Vol. 9, Issue 1, pp. 4630, (2019) (PubMed). Bortey-Sam, Ikenaka, Akoto, Nakayama, Asante, Baidoo, Obirikorang, Mizukawa, Ishizuka: " Association between human exposure to heavy metals/metalloid and occurrences of respiratory diseases, lipid peroxidation and DNA damage in Kumasi, Ghana." in: **Environmental pollution (Barking, Essex : 1987)**, Vol. 235, pp. 163-170, (2018) (PubMed). Ponnusamy, Sinha, Hyde, Borland, Taylor, Pond, Eyre, Inkson, Gilmore, Ashton, Kalra, Canfield: " FTI-277 inhibits smooth muscle cell calcification by up-regulating PI3K/Akt signaling and inhibiting apoptosis." in: **PLoS ONE**, Vol. 13, Issue 4, pp. e0196232, (2018) (PubMed). Rist, Roth, Frommherz, Weinert, Krüger, Merz, Bunzel, Mack, Egert, Bub, Görling, Tzvetkova, Luy, Hoffmann, Kulling, Watzl: "Metabolite patterns predicting sex and age in participants of the Karlsruhe Metabolomics and Nutrition (KarMeN) study." in: **PLoS ONE**, Vol. 12, Issue 8, pp.

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e0183228, (2017) (PubMed).

Klocke, Kopetschke, Grießbach, Langhans, Humrich, Biesen, Dragun, Radbruch, Burmester, Riemekasten, Enghard: "Mapping urinary chemokines in human lupus nephritis: Potentially redundant pathways recruit CD4(+) and CD8(+) T cells and macrophages." in: **European journal of immunology**, (2016) (PubMed).

There are more publications referencing this product on: Product page

Images

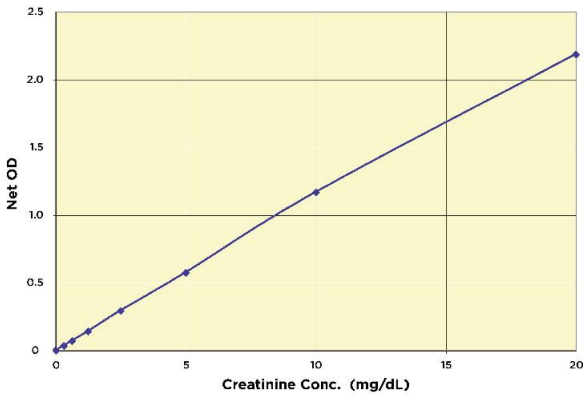

Image 1.

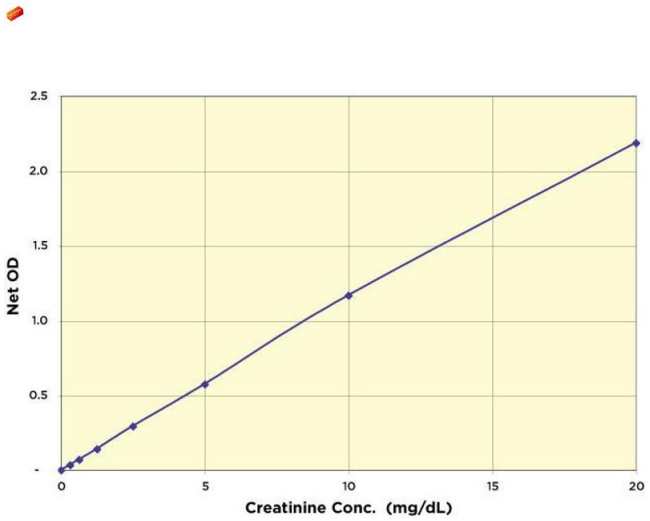

Image 2.