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Urea Nitrogen (BUN) detection Kit



Image

Publications



Overview

Quantity:	2 x 96 tests
Target:	Urea Nitrogen (BUN)
Minimum Detection Limit:	0.065 mg/dL
Application:	Biochemical Assay (BCA)

Product Details	
Purpose:	The DetectX® Urea Nitrogen (also called BUN) Detection Kit is designed to quantitatively measureurea nitrogen in a variety of samples.
Brand:	DetectX®
Sample Type:	Cell Culture Supernatant, Plasma, Saliva, Serum, Urine
Detection Method:	Colorimetric
Specificity:	Species Independent. Samples Types validated: Serum, Plasma, Urine, Saliva and TCM
Sensitivity:	0.30 μg/mL
Characteristics:	The Urea Nitrogen (also called BUN) Detection Kit is designed to quantitatively measure urea nitrogen in a variety of samples. A urea nitrogen standard calibrated to NIST reference materials is provided to generate a standard curve for the assay and all samples should be read off the standard curve. Samples are mixed with Color Reagents A and B and incubated at room temperature for 30 minutes. The colored product is read at 450 nm. The concentration of urea nitrogen in the sample is calculated, after making a suitable correction for any dilution, using software available with most plate readers. The results are expressed in terms of mg/dL urea nitrogen. If samples are to be expressed in terms of mg/dL urea, the data can be converted using the multiplier 2.14.

Product Details

	Calibated - N-Cal Kit, NIST-Calibrated
Components:	Clear 96 well Plates - Bags containing 96 well plates 2 or 5 plates
	Urea Nitrogen Standard - Urea Nitrogen at 100 mg/dl in a special stabilizing solution. 250 µL or
	1 mL Calibrated to NIST Standard Reference Material Lot Number 912a
	Color reagent A - An acidic solution of Color reagent A. CAUTION: CAUSTIC 15 mL or 38 mL
	Color reagent B - An acidic solution of Color reagent B. CAUTION: CAUSTIC 15 mL or 38 mL
Material not included:	Distilled or deionized water free of urea. 96 well plate reader capable of reading optical
	absorption at 450 nm.
	Software for converting optical density (OD) readings from the plate reader and carrying out
	four parameter logistic curve (4PLC) fitting.

Target Details

Target:	Urea Nitrogen (BUN)
Background:	Urea is a by-product of protein metabolism by the liver, and is therefore removed from the blood by the kidneys. Urea freely filters through the glomerulous, 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)1. 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 bleeding2-5. 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 diets6. Urine and saliva are considered to
	be acceptable non-invasive samples for measurement of urea nitrogen7. Serum creatinine is
	another metabolic waste product freely filtered by the glumerulous, but does not undergo
	tubular reabsorption. Its steady rate of elimination is frequently used to generate an index or
	ratio with BUN values for normalized evaluations. Easy to use Serum Creatinine and Urinary

Application Details

Application Notes:	Urea nitrogen is identical across all species and this kit will measure urea nitrogen from
	sources other than human.

Creatinine Detection kits are also available from The Supplier (see Related Products)

The end user should evaluate recoveries of urea nitrogen in samples from other species being tested. The kit will measure urea nitrogen in low concentration samples such as RPMI cell culture media, however the media should not contain Phenol Red. If samples need to be stored after collection, we recommend storing them at -70 °C or lower, preferably after being frozen in liquid nitrogen. This assay has been validated for serum, plasma and urine. Samples containing visible particulate should be centrifuged prior to using. Sample values: Six random adult human serum and plasma samples were diluted and tested in Comment: the assay. The serum samples ranged from 15.6 to 22.3 mg/dL with an average of 18.6 mg/dL BUN while EDTA and heparin plasma samples ranged from 13.6 to 23.7 mg/dL with an average BUN of 18.1 mg/dL. Six random saliva samples were clarified, diluted and tested in the kit. The Urea Nitrogen values ranged from 4.3 to 11.9 mg/dL, with an average concentration of 8.7 mg/dL. Six random urines were also diluted and tested in the kit. The Urea Nitrogen values widely ranged from 37.2 to 1007.2 mg/dL as expected for random urine sampling. Assay Time: 1 h Protocol: A urea nitrogen standard calibrated to NIST reference materials is provided to generate a standard curve for the assay and all samples should be read off the standard curve. Samples are mixed with Color Reagents A and B and incubated at room temperature for 30 minutes. The colored product is read at 450 nm. The concentration of urea nitrogen in the sample is calculated, after making a suitable correction for any dilution, using software available with most plate readers. The results are expressed in terms of mg/dL urea nitrogen. If samples are to be expressed in terms of mg/dL urea, the data can be converted using the multiplier 2.14. Sample Preparation: Dilute sample with distilled or deionized water prior to running in the assay. For serum or plasma, the recommended dilution is ≥ 1:10 and ≥1:20 respectively. Saliva should be clarified by freeze/ thawing, followed by centrifugation at 14,000 rpm at 4 °C for 10 minutes. The saliva supernatant should be diluted at least 1:2 before measuring in the assay. For urine, where

Application Details

	concentrations of urea are higher, the recommended final dilution is ≥ 1:100. For highly colored
	samples, dilution greater than 1:10 or 1:100 may be necessary.
Assay Procedure:	Use the plate layout sheet on the back page to aid in proper sample and standard identification.
	1. Pipet 50 μL of samples or appropriate standards into duplicate wells in the plate.
	2. Pipet 50 μL of water into duplicate wells as the Zero standard.
	3. Add 75 μL of Color Reagent A to each well using a repeater pipet.
	4. Add 75 μL of Color Reagent B to each well using a repeater pipet.
	5. Incubate at room temperature for 30 minutes.
	6. Read the optical density at 450 nm. ® 6 EXPECT ASSAY ARTISTRY
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
	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
	Color reagents A and B are both strong acid solutions and should be handled like any laboratory
	acid.
Storage:	4 °C,RT
Storage Comment:	All components of this kit should be stored at room temperature until the expiration date of the
	kit.
Publications	
Product cited in:	Choi, Lee, HwangBo, Kwon, Kim, Ji, Hong, Kim, Park, Hwang, Moon, Yun, Kim, Choi: "Citrus
	unshiu peel suppress the metastatic potential of murine melanoma B16F10 cells in vitro and in
	vivo." in: Phytotherapy research : PTR , Vol. 33, Issue 12, pp. 3228-3241, (2020) (PubMed).
	Li, Hu, Li, Liang, Xiang, Hsiao, Nguyen, Park, Egranov, Ambati, Putluri, Hawke, Han, Hung,

Danesh, Yang, Lin: "PTEN-induced partial epithelial-mesenchymal transition drives diabetic

kidney disease." in: **The Journal of clinical investigation**, Vol. 129, Issue 3, pp. 1129-1151, (2019) (PubMed).

Zhang, Bush, Yan, Chen: "Gemcitabine nanoparticles promote antitumor immunity against melanoma." in: **Biomaterials**, Vol. 189, pp. 48-59, (2019) (PubMed).

Yu, Chun, Ha, Kim, Lih, Kim, Kim, Chung, Song, Yoo, Chung, Han, Kim, Kwon: "In Vivo Safety and Regeneration of Long-Term Transported Amniotic Fluid Stem Cells for Renal Regeneration." in: **Tissue engineering and regenerative medicine**, Vol. 16, Issue 1, pp. 81-92, (2019) (PubMed).

Yan, Deng, Zhao, Ye, Fang, Meng, Wang, Luo, Liu, Li: "Establishment and characterization of an immortalized human hepatocyte line for the development of bioartificial liver system." in: **Cytotechnology**, (2018) (PubMed).

There are more publications referencing this product on: Product page

Images

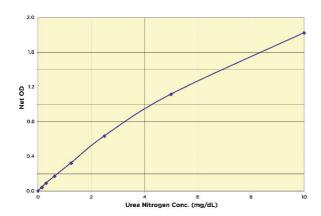


Image 1.