AU

Instructions For Use

UALB
URINE CSF ALBUMIN

REF B38858 4 x 32.6 mL R1, 4 x 4.4 mL R2
B46435 4 x 54.8 mL R1, 4 x 7.3 mL R2

For *in vitro* diagnostic use only.

PRINCIPLE

INTENDED USE

The Urine/CSF Albumin reagent is intended to be used for the quantitation of albumin concentration in human urine and cerebrospinal fluid (CSF) on the Beckman Coulter AU clinical chemistry systems as an aid in the diagnosis of kidney diseases.

SUMMARY AND EXPLANATION

Reference[1,2,3,4,5]

The earliest clinical evidence of nephropathy is the appearance of low, but abnormal levels (> 30 mg/day or 20 µg/min) of albumin in the urine, and patients with moderately increased urine albumin are referred to as having incipient nephropathy. Conventional qualitative tests (chemical strips or dipsticks) for albuminuria do not detect the small increases in urinary albumin excretion seen in early stages of nephropathy. For this purpose, tests for moderately increased urine albumin are used. Moderately increased urine albumin is defined as an albumin excretion rate between 30-300 mg/24h on 2 of 3 urine collections.

Increased urinary albumin loss is considered a clinically important indicator of deteriorating renal function in diabetic subjects and regular screening of urinary albumin loss is valuable in monitoring type 1 and type 2 diabetes. Prospective studies have demonstrated that increased urinary albumin excretion precedes and is highly predictive of diabetic nephropathy, end stage renal disease, cardiovascular mortality, and total mortality in patients with diabetes mellitus. In addition, increased urinary albumin excretion identifies a group of non-diabetic subjects at increased risk for coronary artery disease.

The degree of permeability of the blood-CSF barrier may be evaluated by the simultaneous measurement of serum and CSF albumin. CSF albumin measurements may also be used to determine the IgG CSF/albumin CSF ratio, which is an important factor in differentiating between intrathecal and localized synthesis of IgG.

METHODOLOGY

Urine/CSF Albumin reagent is used to measure albumin concentration by a turbidimetric method. In the reaction, anti-human serum albumin antibodies combine with albumin from the sample to form immune complexes that scatter light in proportion to their size, shape and concentration. The absorbance of these aggregates is proportional to the albumin concentration in the sample. Change in absorbance is measured at 380nm with subtraction of a reference wavelength at 800nm.

SPECIMEN

TYPE OF SPECIMEN

Urine and CSF may be used. The urine specimen should be a fresh or a 24 hour urine.

Urine and CSF may be diluted 1 in 10 on-board the analyzer with either 0.9% saline or deionized water using automatic dilution function. Refer to the Beckman Coulter AU analyzer User Guide/Instructions For Use (IFU) for detailed instructions.

SPECIMEN STORAGE AND STABILITY

Urine[6,7,8]: Stable for 1 month when stored refrigerated (2...8°C). Frozen samples are not recommended.

Cerebrospinal fluid[6,7]: Stable for 72 hours when stored refrigerated (2...8°C). Stable for 6 months when stored frozen at -20°C.

Specimen storage and stability information provides guidance to the laboratory. Based on specific needs, each laboratory may establish alternative storage and stability information according to good laboratory practice or from alternative reference documentation.

REAGENTS

CONTENTS

Urine/CSF Albumin reagent

WARNING AND PRECAUTIONS

Exercise the normal precautions required for handling all laboratory reagents.

Dispose of all waste material in accordance with local guidelines.

Antisera was produced in healthy animals in facilities free from rinderpest, foot and mouth disease, peste des petits ruminants, Rift Valley fever, bovine spongiform encephalopathy and blue tongue disease.

This product contains material of animal origin. The product should be considered as potentially capable of transmitting infectious diseases.

REACTIVE INGREDIENTS

Final concentration of reactive ingredients:

Phosphate buffer	18 mmol/L
Goat Anti-human Albumin Antibody	Variable
Polyethylene glycol 8000	3.6%
Sodium Azide (used as a preservative)	< 0.1% (w/w)

The concentrations of the reactive components of the reagents shown on the kit label are the actual concentrations in the individual R1/R2 vials. The reagent composition which is shown in the Instructions For Use is the final concentration of these components in the reaction cuvette after addition of R1, Sample, and R2.

⚠ CAUTION

Sodium azide preservative may form explosive compounds in metal drain lines. See NIOSH Bulletin: Explosive Azide Hazard (8/16/76).
To avoid the possible build-up of azide compounds, flush wastepipes with water after the disposal of undiluted reagent. Sodium azide disposal must be in accordance with appropriate local regulations.

GHS HAZARD CLASSIFICATION

Not classified as hazardous

SDS	Safety Data Sheet is available at beckmancoulter.com/techdocs

MATERIALS NEEDED BUT NOT SUPPLIED WITH REAGENT KIT

Urine/CSF Albumin Calibrator (B38859)

Deionised water for performing reagent blank.

EQUIPMENT AND MATERIALS

For AU400/400^{e}/480, AU640/640^{e}/680, AU2700/5400/AU5800 and DxC 700 AU Beckman Coulter Analyzers.

REAGENT PREPARATION

The reagents are ready for use and can be placed directly on board the instrument.

REAGENT STORAGE AND STABILITY

The reagents are stable, unopened, up to the stated expiry date when stored at 2…8°C.

Opened bottles of reagent are stable for 60 days when stored in the refrigerated compartment of the analyzer.

Do Not Freeze

INDICATIONS OF DETERIORATION

Visible signs of microbial growth, turbidity or precipitate, or any change in reagent color may indicate degradation and warrant discontinuance of use.

CALIBRATION

CALIBRATION INFORMATION

Urine/CSF Albumin Calibrator Reference No. B38859.

The frequency of calibration for this procedure is every 60 days.

Recalibration of this test is required when any of these conditions exist:

Change in reagent lot or significant shift in control values;

Major preventative maintenance was performed on the analyser or a critical part was replaced.

Following calibration, the resulting curve should be visually reviewed, on the Beckman Coulter analyser, for acceptability using the software options - Routine, Calibration Monitor, Calibration Curve. Quality control procedures should be undertaken immediately following calibration in accordance with good laboratory practice.

TRACEABILITY

The Urine/CSF Albumin calibrator values are traceable to the International Federation of Clinical Chemistry Certified Reference Material CRM470.

QUALITY CONTROL

During operation of the Beckman Coulter AU analyzer at least two levels of an appropriate quality control material should be tested a minimum of once a day.

Only control materials, of human origin, with values determined by this Beckman Coulter system should be used.

Each laboratory should establish its own control frequency however good laboratory practice suggests that controls be tested each day patient samples are tested and each time calibration/blanking is performed.

Quality Controls should be used in accordance with the applicable local guidelines.

The results obtained by any individual laboratory may vary from the given mean value. It is therefore recommended that each laboratory generates analyte specific control target values and intervals based on multiple runs according to their requirements. These target values should fall within the corresponding acceptable ranges given in the relevant product literature.

If any trends or sudden shifts in values are detected, review all operating parameters.

Each laboratory should establish guidelines for corrective action to be taken if controls do not recover within the specified limits.

Please note that the recovery of some controls may vary with reagent lots due to the use of non-human materials in the controls.

TESTING PROCEDURE(S)

Refer to the appropriate Beckman Coulter AU analyser User Guide/Instructions For Use (IFU) for analyser-specific assay instructions for the sample type as listed in the Intended Use statement.

CALCULATIONS

The Beckman Coulter AU analyzers automatically compute every determination at the same time interval.

RESULTS INTERPRETATION

Automatically generated for each sample in mg/L (mg/dL).

REPORTING RESULTS

REFERENCE INTERVALS

American Diabetes Association Definition of Moderately increased urine albumin[1]

Urine:	24-h collection (mg/24h)	Timed collection (µg/min)	Spot collection (µg/mg creatinine)
Normal	< 30	< 20	< 30
Moderately increased	30 - 299	20 - 199	30 - 299
Clinical albuminuria	≥ 300	≥ 200	≥ 300

CSF[9]:	3 mo – 4y	0 - 450 mg/L (0 - 45 mg/dL)
	> 4 y	100 - 300 mg/L (10 - 30 mg/dL)

Reference Intervals shown above were taken from the literature.

Expected values may vary with age, sex, sample type, diet and geographical location. Each laboratory should verify the transferability of the expected values to its own population, and if necessary determine its own reference interval according to good laboratory practice. For diagnostic purposes, results should always be assessed in conjunction with the patient's medical history, clinical examinations and other findings.

PROCEDURAL NOTES

LIMITATIONS

1. Samples with albumin concentrations > 20,000 mg/L (2,000 mg/dL) can generate false low results without appropriate "Z" flags due to excess antigen in the sample.
2. The albumin result of a urine sample may be elevated when it immediately follows a serum sample. In order to eliminate this effect it is recommended to: Calibrate the Urine/CSF albumin assay separately to serum assays. Avoid requisition of a urine sample following a serum sample. For the AU2700, AU5400, AU480, AU680, AU5800 and DxC 700 AU Analyzers sample contamination parameters are available on the Beckman Coulter website. If sample contamination parameters are not programmed, place a sample cup containing 2% AU wash solution prior to urine samples and requisition a test for this sample.

NOTICE

3. Samples with extremely abnormal optical characteristics, including turbidity, interfere with test results. Extremely turbid samples should not be run.

INTERFERENCES

Reference[10]

Results of studies conducted show that the following substances may interfere with this procedure:

The criteria for no significant interference (NSI) is recovery within 10% or 2 mg/L (0.2 mg/dL) of the initial value.

Urine:

Creatinine:	NSI up to 300 mg/dL Creatinine
Glucose:	NSI up to 3,000 mg/dL Glucose
Urea:	NSI up to 5,000 mg/dL Urea
Ascorbate:	NSI up to 500 mg/dL Ascorbate
Citrate:	NSI up to 50 mg/dL Citrate
Magnesium:	NSI up to 400 mg/dL Magnesium
Oxalate:	NSI up to 30 mg/dL Oxalate
Conjugated Bilirubin:	NSI up to 40 mg/dL Conjugated Bilirubin
Hemoglobin:	NSI up to 500 mg/dL Hemoglobin
Acetone:	NSI up to 350 mg/dL Acetone
Uric Acid:	NSI up to 10 mg/dL Uric Acid
Urobilinogen:	NSI up to 2.25 mg/dL Urobilinogen
Acetaminophen:	NSI up to 300 mg/dL Acetaminophen
Ibuprofen:	NSI up to 400 mg/dL Ibuprofen
Metronidazole:	NSI up to 600 mg/dL Metronidazole
5-Aminosalicylate:	NSI up to 150 mg/dL 5-Aminosalicylate
Calcium:	NSI up to 78 mg/dL Calcium. Concentrations above this interfere with the test result

CSF:

Conjugated Bilirubin:	NSI up to 40 mg/dL Conjugated Bilirubin
Hemoglobin:	NSI up to 500 mg/dL Hemoglobin

Eltrombopag and its metabolites may interfere with this assay causing erroneously low patient results.

The information presented is based on results from Beckman Coulter studies and is current at the date of publication. Beckman Coulter Ireland Inc. makes no representation about the completeness or accuracy of results generated by future studies. For further information on interfering substances, refer to Young[11] for a compilation of reported interferences with this test.

PERFORMANCE CHARACTERISTICS

PERFORMANCE CHARACTERISTICS

Data contained within this section is representative of performance on Beckman Coulter systems. Data obtained in your laboratory may differ from these values.

ANALYTIC RANGE

Urine: The analytical range for the Urine application is 7 – 450 mg/L. (0.7 – 45 mg/dL).

CSF: The analytical range for the CSF application is 10 – 450 mg/L. (1.0 – 45 mg/dL).

SENSITIVITY

The limit of detection (LoD) and Limit of Quantitation (LoQ) were determined in accordance with the CLSI EP17-A2 guideline[12]. Correctly operating AU Systems should exhibit sensitivity less than or equal to 7 mg/L (0.7 mg/dL) for Urine and less than or equal to 10 mg/L (1.0 mg/dL) for CSF.

The following data was obtained on an AU5800 analyzer using Urine & CSF patient samples:

Urine Application:	
LoB	0.0mg/L (0.00mg/dL)
LoD	0.7 mg/L (0.07 mg/dL)
LoQ	7 mg/L (0.7 mg/dL)

CSF Application:	
LoB	0.0mg/L (0.00mg/dL)
LoD	1.3 mg/L (0.13 mg/dL)
LoQ	7 mg/L (0.7 mg/dL)

LoB was calculated as the upper 95th percent confidence interval. LoD is defined as the lowest albumin concentration that can be detected with a probability of 95%. LoQ is defined as the lowest concentration with an inter-assay precision of < 20% CV.

METHODS COMPARISON

Reference[13]

Patient Urine samples were run to compare this Urine Albumin assay on the AU5800 analyzer against another commercially available assay. Results of Deming regression analysis were as follows:

Slope	Intercept	r	n	Sample Range
1.09	0.3 mg/L (0.03 mg/dL)	1.00	131	8.1 - 407 mg/L (0.81 - 40.7 mg/dL)

Patient CSF samples were run to compare this CSF Albumin assay on the AU5800 analyzer against another commercially available assay. Results of Deming regression analysis were as follows:

Slope	Intercept	r	n	Sample Range
1.05	-7.7 mg/L (-0.77 mg/dL)	0.99	131	17.2 - 412 mg/L (1.72 - 41.2 mg/dL)

PRECISION

Correctly operating AU Systems should exhibit precision values less than or equal to the following for both Urine & CSF applications:

Repeatability	5% CV or 1 mg/L (0.1 mg/dL)
Within Laboratory Precision	10% CV or 2 mg/L (0.2 mg/dL)

Estimates of imprecision based on CLSI recommendations[14] are consistent with typical performance. Comparative performance data for the AU5800 system evaluated using the CLSI approved guideline EP05-A2 appears in the table below. Each laboratory should characterize their own instrument performance for comparison purposes.

The following data was obtained on an AU5800 analyzer using 3 Urine & 3 CSF pools analyzed over 20 days:

TYPE OF IMPRECISION	SAMPLE TYPE	No. Data Points	MEAN		SD		%CV
			mg/L	mg/dL	mg/L	mg/dL	
Repeatability	Urine Pool 1	80	16.8	1.68	0.2	0.02	0.9
	Urine Pool 2	80	32.8	3.28	0.2	0.02	0.6
	Urine Pool 3	80	200	20.0	3	0.3	1.4
Within Laboratory	Urine Pool 1	80	16.8	1.68	0.7	0.07	4.3
	Urine Pool 2	80	32.8	3.28	0.8	0.08	2.5
	Urine Pool 3	80	200	20.0	4	0.4	2.1
Repeatability	CSF Pool 1	80	63.0	6.30	0.7	0.07	1.0
	CSF Pool 2	80	265	26.5	4	0.4	1.6
	CSF Pool 3	80	350	35.0	7	0.7	1.9
Within Laboratory	CSF Pool 1	80	63.0	6.30	1.1	0.11	1.8
	CSF Pool 2	80	265	26.5	6	0.6	2.4
	CSF Pool 3	80	350	35.0	9	0.9	2.5

ADDITIONAL INFORMATION

DxC 700 AU requires that each reagent application has a standard format of abbreviated Closed Test Name. This Closed Test Name is required to allow automated loading of the calibrator information for each application as part of the DxC 700 AU Closed System. Refer to the table below for the Closed Test Name assigned to each application for this assay.

Test Name	Description
ULB1G	Urine/CSF Albumin (Urine)
ULB1G	Urine/CSF Albumin (CSF)

Setting Sheet Footnotes

User defined

† Beckman Coulter Urine/CSF Albumin Calibrator Cat No.: B38859.

* Values set for working in mg/L. To work in mg/dL, divide by 10.

REVISION HISTORY

Add new languages

Preceding version revision history

Revised GHS section

Revised Interferences section.

REFERENCES

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