

KOVA Liqua-Trol® with Microscopics Level I (Abnormal) Urinalysis Control

Revised: 10/31/18: Combur-Test Visual Leukocyte Esterase only

KOVA Liqua-Trol		Lot No: K302690							Expiration Date: 2020-02	
CONSTITUENT	REAGENT TEST STRIP RESULTS ¹									
	SIEMENS REAGENT STRIP ^a								BIOSYS ^j UriScan Optima™ and Optima II™ PSS® Select Consult® Diagnostics	IRIS REAGENT STRIP ⁱ iChem® Velocity™
	Visual	Clinitek®50	Clinitek®STATUS ¹¹	Clinitek®100	Clinitek® 500 / Advantus	Clinitek®Atlas	Clinitek®Novus			
pH	7.0 - 8.0	7.0 - 8.0	7.0 - 8.0	7.0 - 8.0	7.0 - 8.0	7.0 - 8.0	7.0 - 8.0		6.5 - 8.0	7.0 - 8.0
Protein	Trace - ≥ 300 mg/dL	Trace - ≥ 300 mg/dL	Trace - ≥ 300 mg/dL	Trace - ≥ 300 mg/dL	Trace - ≥ 300 mg/dL	Trace - ≥ 300 mg/dL	Trace - ≥ 1000 mg/dL		10.0 - 300 mg/dL	30 - ≥ 500 mg/dL
Glucose	100 - 2000 mg/dL	100 - ≥ 1000 mg/dL	100 - ≥ 1000 mg/dL	Trace - ≥ 1000 mg/dL	100 - ≥ 1000 mg/dL	100 - ≥ 1000 mg/dL	100 - ≥ 1000 mg/dL		100 - 2000 mg/dL	50 - ≥ 500 mg/dL
Ketones	5 - 160 mg/dL	Trace - ≥ 80 mg/dL	Trace - ≥ 160 mg/dL	Trace - ≥ 80 mg/dL	Trace - ≥ 80 mg/dL	Trace - ≥ 80 mg/dL	Trace - ≥ 160 mg/dL		5.0 - 100 mg/dL	5 - 80 mg/dL
Bilirubin	1 - 3 + ⁶	Small - Large	Small - Large	Small - Large	Small - Large	Small - Large	Small - Large		0.5 - 3.0 mg/dL	2 - 4 mg/dL
Blood (hemoglobin)	Trace - 3 + ⁸	Trace - Lysed - Large	Trace - Lysed - Large	Trace - Large	Trace - Lysed - Large	Trace - Large	Trace - Large		5.0 - 250 RBC/μL	0.03 - ≥ 1 Ery/μL
Nitrite	Positive	Positive	Positive	Positive	Positive	Positive	Positive		Positive	Positive
Urobilinogen	2 - 8 EU/dL	2.0 - ≥ 8.0 EU/dL	2.0 - ≥ 8.0 EU/dL	2.0 - ≥ 8.0 EU/dL	2.0 - ≥ 8.0 EU/dL	2.0 - ≥ 8.0 EU/dL	1.0 - ≥ 8.0 EU/dL		1.0 - 12.0 mg/dL	2.0 - 4.0 mg/dL
Specific Gravity	1.015 - 1.030	1.015 - ≥ 1.030	1.015 - ≥ 1.030	1.020 - ≥ 1.030	1.015 - ≥ 1.030	1.020 - ≥ 1.030 ⁹	1.020 - ≥ 1.030 ⁹		1.010 - ≥ 1.030	1.020 - 1.030 ⁹
Leukocyte Esterase ⁵	Trace - 3+	Trace - Large	Trace - Large	Trace - Large	Trace - Large	Trace - Large	Trace - Large		10.0 - 500 WBC/μL	25 - 500 Leu/μL
Microalbumin	N/A	N/A ¹³	N/A ¹³	N/A ¹³	N/A	N/A	N/A ¹²		N/A	N/A
Creatinine	100 - 300 mg/dL	100 - 300 mg/dL	100 - 300 mg/dL	100 - 300 mg/dL	100 - 300 mg/dL	N/A	100 - ≥ 300 mg/dL ¹²		N/A	NA
A:C	N/A	30- 300 mg/g Abnormal - > 300 mg/g High Abnormal ¹³			N/A	N/A	N/A ¹²		N/A	N/A
Ascorbic Acid	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	Negative

PHYSICAL CHARACTERISTICS

Property	Value Range	Method
Appearance	Clear - Slightly Cloudy	Visual
Color	Amber - Red	Visual
Specific Gravity	1.024 - 1.028	Refractometer (Room Temp.)
Osmolality	775 - 875 mOsm Freezing Pt. Depression	
pH	7.0 - 8.0	pH meter

ALTERNATIVE TESTS

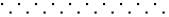
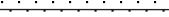
Constituent/Method	Value Range
Bilirubin/Ictotest® ^a	Positive: Pink - Purple
Protein/Sulfosalicylic Acid (3%)	
Qualitative	Trace - 4 + Pink - Orange
Glucose / AimTab™ Reducing Substances ^m	Positive: Purple - Green ^{1/4 - 1%}
Ketone / K-Check® ^q	Small - Large

Note: Other manufacturers’ methods will work and should be confirmed by the laboratory.

PREGNANCY TESTING

Method	Result
Beckman Coulter ICON® 20 hCG ^e	Negative
Quidel QuickVue® hCG ^d	Negative
Siemens Clinitest® hCG ^a	Not Assigned
McKesson Consult® hCG Dipstick/Cassette ^l	Negative
Cardinal Health® hCG Dipstick/Cassette ⁿ	Negative

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CONSTITUENT	REAGENT TEST STRIP RESULTS ¹									
	ROCHE REAGENT STRIP ^b							77 ELEKTRONIKA REAGENT STRIP ^c		
	Combur-Test® Visual	Chemstrip® Visual	Chemstrip Criterion II™	URISYS 1800™	URISYS 1100™	Cobas® U 411	URISYS® 2400	HandUReader, DocUReader, DocUReader 2, LabUReader, LabUReader Plus, LabUReader Plus 2, LabUMat, LabUMat 2, Visual Reading		
pH	7 - 8	7 - 8	7 - 8	7 - 8	7 - 8	7 - 8	7 - 8		6 - 8	6 - 8
Protein	30 - 500 mg/dL	Trace - 500 mg/dL	15 - 500 mg/dL	25 - 500 mg/dL	Trace - 500 mg/dL	15 (25) - 500 (500) mg/dL ⁷	25 - 500 mg/dL		30 - 500 mg/dL ¹⁰	+ - +++ ¹⁰
Glucose	100 - 1000 mg/dL	100 - 1000 mg/dL	100 - 1000 mg/dL	100 - 1000 mg/dL	100 - > 1000 mg/dL	100 (100) - 1000 (1000) mg/dL ⁷	100 - 1000 mg/dL		150 - 1000 mg/dL	++ - ++++
Ketones	1 - 3 + ²	1 - 3 + ²	5 - 150 mg/dL	5 - 150 mg/dL	15 - 150 mg/dL	5 - 150 mg/dL	5 - 150 mg/dL		15 - 150 mg/dL	+ - +++
Bilirubin	1 - 3 +	1 - 3 +	1 - 6 mg/dL	1 - 6 mg/dL	1 - 6 mg/dL	1 - 6 mg/dL	1 - 6 mg/dL		1 - 6 mg/dL	+ - +++
Blood (hemoglobin)	5 - 10 - 250 Ery/µL	Trace - 250 Ery/µL	10 - 250 Ery/µL	10 - 250 Ery/µL	Trace - 250 Ery/µL	10 - 250 Ery/µL	10 - 250 Ery/µL		10 - 300 Ery/µL	+ - +++
Nitrite	Positive	Positive	Positive	Positive	Positive	Positive	Positive		Positive	+
Urobilinogen	Positive ³	Positive ³	4 - 12 mg/dL	4 - 12 mg/dL	4 - ≥ 12 mg/dL	4 - 12 mg/dL	4 - 12 mg/dL		Normal - 12 mg/dL ¹⁰	Normal - ++++ ¹⁰
Specific Gravity	1.005 - 1.030	1.005 - 1.030	1.010 - 1.030	1.010 - 1.030	1.010 - 1.030	1.010 - 1.030	1.020 - 1.030 ⁹		1.005 - 1.035	1.005 - 1.035
Leukocyte Esterase ⁵	10 - 25 - 500 Leu/µL	Trace - 2+	25 - 500 Leu/µL	25 - 500 Leu/µL	25 - 500 Leu/µL	25 - 500 Leu/µL	25 - 500 Leu/µL		Negative - 500 Leu/µL ¹⁰	Negative - +++ ¹⁰
Microalbumin	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A
Creatinine	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A
A:C	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A
Ascorbic Acid	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Negative	Negative

MICROSCOPIC QUALITY CONTROL
CELL COUNTS^{4,5}

Constituent	Fixed Rotor	Swing Rotor	DIRUI ^h FUS-2000	Iris ⁱ iQ200	Siemens ^a Atellica UAS 800	UriSed Variants ^c COBIO Variants	Mindray ^o EH-20 Series	Toyobo ^p UScanner(E)
Qualitative ^f								
Red Cells/hpf	18 - 69	25 - 98	---	---	64 - 91	11 - 144	---	> 50
White Cells/hpf	23 - 69	29 - 92	---	---	46 - 58	13 - 96	---	> 50
Quantitative ^g								
Red Cells/μL †	125 - 250	197 - 365	24 - 62	4 - 8	280 - 400	50 - 630	50 - 300	---
White Cells/μL †	100 - 233	179 - 353	94 - 170	43 - 51	201 - 254	60 - 420	50 - 250	---
Crystals ***	Present	Present	---	---	---	Present	None - Present	---
Casts (low power)	< 1	< 1	---	---	---	< 1	< 1	---
Bacteria	Present	Present	---	---	---	Present	---	---

† Iris iQ200 cells/hpf.
*** Calcium oxalate, calcium phosphate, amorphous material. Urinary artifacts may be present. Any mucus threads observed are artifactual.



7272 Chapman Avenue, Suite B
Garden Grove, California 92841
UNITED STATES
(855) 217-6399 • (714) 902-1700
Fax (714) 908-7945

Advena Ltd.
Pure Offices, Plato Close
Warwick CV34 6WE
UNITED KINGDOM



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CONSTITUENT	REAGENT TEST STRIP RESULTS ¹						
	DIRUI ^h		McKesson ^l	ARKRAY ^k	Mindray ^o		
	DIRUI REAGENT STRIP [®]		Consult [®] Diagnostics	Aution Reagent Strip	Hyssen Urinalysis		
	DIRUI	DIRUI	REAGENT STRIPS	Aution Hybrid [™]	Reagent Strips		
	H-100	H-800 / FUS-2000	120 Urine Analyzer	AU-4050	UA-5600,5800,6600,6800		
pH	7.0 - 8.0	7.0 - 8.0	7.0 - 8.0	7.0 - 8.0	7.0 - 8.5		
Protein	Trace - ≥ 300 mg/dL	Trace - ≥ 300 mg/dL	15 - 300 mg/dL	10 - 600 - Over mg/dL	15 - 300 mg/dL		
Glucose	100 - ≥ 1000 mg/dL	100 - ≥ 1000 mg/dL	100 - 1000 mg/dL	70 - 1000 - over mg/dL	50 - 1000 mg/dL		
Ketones	5 - ≥ 80 mg/dL	5 - ≥ 80 mg/dL	5 - 80 mg/dL	5 - 150 - over mg/dL	15 - 80 mg/dL		
Bilirubin	1- ≥ 6 mg/dL	1- ≥ 6 mg/dL	1- 4 mg/dL	0.5 - 10.0 - over mg/dL	1 - 6 mg/dL		
Blood (hemoglobin)	10 - ≥ 200 Ery/μL	10 - ≥ 200 Ery/μL	10 - 200 Ery/μL	0.03 - 1 - over mg/dL	25 - 200 Ery/μL		
Nitrite	Positive	Positive	Positive	1 - 2 +	Positive		
Urobilinogen	0.2 - ≥ 8 mg/dL	0.2 - ≥ 8 mg/dL	2 - 8 mg/dL	2 - 12- over mg/dL	2 - 8 mg/dL		
Specific Gravity	1.020 - ≥ 1.030	1.015 - 1.035	1.015 - 1.030	1.020 - 1.030 ⁹	1.015 - 1.030		
Leukocyte Esterase ⁵	15 - ≥ 500 Leu/μL	15 - ≥ 500 Leu/μL	15 - 500 Leu/μL	25 - 500 Leu/μL	75 - 500 Leu/μL		
Microalbumin	30 - 150 mg/L	30 - 150 mg/L	N/A	N/A	N/A		
Creatinine	100 - 300 mg/dL	100 - 300 mg/dL	N/A	N/A	50 - 200 mg/dL		
A:C	< 30 mg/g Normal	30 - 300 - ≥ 300 mg/g	N/A	N/A	N/A		
Ascorbic Acid	N/A	N/A	N/A	N/A	N/A		

1. Methodology changes or variability in reagent strip lots can influence Liqua-Trol recoveries. It is recommended that the value listed here be used as guidelines until the laboratory has established its own quality control ranges.

2. An atypical brownish-purple visual result may be noted on the ketone pad. Use the color intensity to interpret the results.

3. A pink-lavender visual result on the Roche Chemstrip urobilinogen pad should be interpreted as positive.

4. The cell count ranges apply to a microscopic field viewed using a 10x wide eyepiece and a 40x objective lens. The approximate diameter of such a field under high power magnification is 0.50 mm; therefore, an appropriate correction factor should be applied when a microscope with a different field size is used in order to maintain consistency in reporting results.

5. A microscopic examination of the sedimentation is recommended in conjunction with a screening test for leukocyte esterase to detect lysed leukocytes. Testing for leukocyte esterase should not be used to replace microscopic analysis as significant and often critical pathologically diagnostic elements will go undetected.

6. An atypical pink-reddish brown visual result may be noted on the Siemens bilirubin pad. Use the color intensity to interpret the results.

7. Ranges assigned in USA mg/dL and with International mg/dL in parentheses.

8. An atypical navy-blue visual result may be observed on the blood pad. Use the color intensity to interpret the results.

9. Value assigned with normal system settings at .005 increments.

10. An atypical color for protein, urobilinogen and leukocyte esterase.

11. Value Assignment done with software 1.900:002.

12. Values assigned for international use only.

13. Microalbumin values are assigned with Siemens Microalbumin strips on the CLINITEK 50, STATUS, and 100 only.
- Note: Particulate may form during storage. Gently swirl the control before use to assure good mixing and resuspension of the microscopic constituents.

- a Siemens Medical Solutions Diagnostics

b Roche Diagnostics Corporation

c 77 Elektronika KFT (For International Use Only)

d Quidel Corporation

e Beckman Coulter, Inc

f Using KOVA[®] System with KOVA[®] Slide II, KOVA Glasstic[®] Slide 10

g Using KOVA[®] System with KOVA[®] Glasstic[®] Slide 10 with Grids

h DIRUI Industrial Co., Ltd (For International Use Only)

i Iris Diagnostics

j BIOSYS Laboratories, Inc

k ARKRAY, Inc

l McKesson Medical-Surgical / Consult[®]Diagnostics

m Germaine Labortories, Inc.

n Cardinal Health[®]

o Mindray

p Toyobo Co.,Ltd

q Biorex Labs



7272 Chapman Avenue, Suite B
Garden Grove, California 92841
UNITED STATES
(855) 217-6399 • (714) 902-1700
Fax (714) 908-7945

Advena Ltd.
Pure Offices, Plato Close
Warwick CV34 6WE
UNITED KINGDOM

