

# **Urinalysis from Roche**

What else...





### Ascorbic acid - Vitamin C

Healthy, powerful and interfering



#### **Be attentive**

Consider that laboratories testing urine samples regularly found high amounts of ascorbic acid ( $\geq$ 400 mg/L) in a significant proportion of a routinely tested population<sup>1</sup>

#### **Identify the problem**

Recognize the potential of ascorbic acid interference on urine test strips based on the peroxidase redox indicator test principle

#### **Diminish adulterating influences**

Eliminate the interference of ascorbic acid in urine test strips and prevent false negative results, which necessitate a retesting of patients or a more expensive microscopic examination

#### Find the answer

Do not miss the opportunity to detect symptoms of a potentially serious disease. Use ascorbic acid resistant urine test strips and detect immediately reliable and precise results

#### Solve the problem

Use iodate impregnated components to minimize the influence of ascorbic acid on blood and glucose test pads even under high levels of ascorbic acid (up to 750 mg/L)

#### **Feel safe**

Avoid potentially serious and costly consequences of false negative results for doctor and patient using iodate impregnated urine strips such as applied in Combur-Test®





## **Ascorbic acid - Vitamin C** Specifications

Definition	Water soluble vitamin Chemical name: 2-oxo-L-threo-hexono-1,4-lactone-2,3-enediol A six-carbon compound, structurally related to glucose					
Characteristics	Average half life: 10-20 days <sup>2</sup> Elimination via the urine Renal threshold: plasma ascorbate concentrations of about 1.2-1.8 mg/dL corresponding to 60 mg doses per day <sup>3-6</sup> Average body tissue of an adult stores 1.2-2.0 g presumably maintained by taking 60-75 mg per day <sup>3-5,7,8</sup>					
RDA*	90 mg per day for an adult male (set by the US Food and Nutrition Board in 2000) <sup>9</sup> Ingestion of 60 mg/day prevents the development of scurvy for 30-45 days with a diet lacking vitamin C <sup>3,4,7,8</sup>					
Sources	<ul> <li>Natural: fresh fruits and vegetables, e.g., oranges, lemons, grapefruits, watermelons, papayas, strawberries, green leafy vegetables, tomatoes, broccoli, etc.</li> <li>Synthetic: used in vitamin preparation, as preservative and antioxidant (e.g., E300, E301, E302, E303, E304), discoloration inhibitor, supplement in tablets, food additive</li> </ul>					
Consumption	The most frequently used vitamin supplement in the world <sup>10</sup> Worldwide annual demand in 1995 was evaluated at 60.000 tons <sup>11</sup>					
Functions	Required for many metabolic functions in humans and cofactor for lots of metabolic reactions Potent reducing agent playing an important role in the antioxidant defense system, immune competence, and in strengthening resistance to infection Vitamin C prevents DNA mutations and might be important in treating certain cancers, heart disease and other chronic diseases					
Interference	Ascorbic acid has the ability to prevent oxidization of indicator substances in urine test strips e.g. in peroxidase redox indicator test principle. Interference can be removed using iodate test components such as applied in Combur-Test®					

\* Recommended daily allowance

#### References

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## cobas u 411 analyzer

Fast, flexible and competent





Considered for workloads of approximately 80 samples per day ... and what it takes to further optimize workflow

#### Define your own pace

Impact workload with flexibility of continuous test strip loading

#### **Consolidate your analysis**

Work parallel on the **cobas u** 411 analyzer and its sediment terminal as a result of a consolidated work- and dataflow for strip analysis and microscopy. Ease documentation and improve overview of patient records with single print-out for strip and microscopic information

#### **Ease workload**

Reduce manual work with sample identification via barcode reader or download from host, electronic transfer of sediment work list and printable QC results

#### Judge at one glance

Differentiate quickly normal and abnormal results or samples to sieve for microscopy examination with availability of userdefinable flags

#### **Ensure comparability**

Standardize microscopy result reporting with selection of pre-defined result ranges on the sediment terminal

#### Secure your investment

Stay easily up-to-date with simplified software upload via USB slot





## **cobas u 411 analyzer** *Technical specifications*

Instrument	System	Semi-automated urine test strip analyzer					
	Туре	Reflectance photometer					
	Measuring system	Wave lengths: 470 nm, 555 nm, 620 nm					
	Throughput	Approx. 600 test strips/h					
	Memory	1000 sample results, 300 control results (3 levels)					
	User interface	LCD touch screen (90x120 mm)					
	Printer	Thermal printer					
	Certificates	CE, UL, CB, CUL					
	Physical dimensions	Width: 42.5 cm Depth: 34.0 cm Height: 26.0 cm					
	Weight	Approx. 12 kg					
Strips*	Test strips	Combur <sup>10</sup> Test <sup>®</sup> M					
	Parameters	Specific gravity, pH, leukocytes, nitrite, protein, glu cose, ketones, urobilinogen, bilirubin, blood (erythrocyte hemoglobin), color					
	Calibration	Control-Test M calibration strip					
Connectivity	System interfaces	Serial interfaces to barcode reader, sediment terminal and PO Host; USB Slot					
	Host protocols	ASTM + and Urisys <sup>®</sup> 2400 ASTM					
	Sample identification	Sample ID via manual entry, barcode reader or download from host					
Accessories	Туре	Barcode reader, Sediment Terminal					
	Supported barcode types	Code 39, Code 128, NW 7 (Codabar), ITF (Interleaved 2 of 5)					

\* Combur Test<sup>®</sup> strips are marketed under Chemstrip<sup>®</sup> in United States and Canada.

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### **Combur-Test<sup>®</sup> strip technology**

Accurate, safe and protective



#### Be confident with the results

Count on protection and stable performance since sensitive areas are protected against contact, contamination or abrasion with the application of a nylon mesh

#### Have no doubts

Benefit from a uniform color development of test pads due to the usage of a fine porous nylon mesh

#### Believe in what you see

Be convinced of your diagnosis. Identify even slight pathological changes in the urine as a result of high sensitivity and clear color changes in the test area

#### **Detect UTI for sure**

Prevent false leukocyte results through improved reagent stability in the leukocyte test pad

#### Don't worry with ascorbic acid

Avoid patient revisits just because of vitamin C interference with iodate impregnated components protecting blood and glucose detection even from high levels of ascorbic acid

#### **Rely on quality**

Provide a basis for standardized diagnostic procedures with the application of high-quality urine test strips based on years of research and development





## **Combur-Test**<sup>®</sup> **strip technology** *Specifications*

Nylon mesh fixing of components – unique sealing technology	No interference with glue components Avoidance of contamination by protective function Uniform liquid penetration and color development No run over of reaction color							
Stable reaction colors	Synchronized reaction time All in 60 seconds							
Sturdy plastic carrier foil	No splashing of urine, hygienic strip reading Absorbent paper							
lodate impregnated component	Protects blood and glucose test areas efficiently from ascorbic acid interference and false-negative results by oxidization even at high concentrations of vitamin C. When five common 10 parameter urine test strips are compared, Combur-Test <sup>®</sup> strip showed the highest resistance to ascorbic acid interference at higher hemoglobin or glucose concentrations ':							
	Ascorbic acid interference in routine analysis							
	<b>Hemoglobin</b> (Target value of 0.075 mg/dL = 25 Ery/μL)	Glucose (Target value of 300 mg/dL)						
	• Combur 10 • Other Brands Target value 25 Combur 10 test* UX from Roche 10 0 0 0 0 100 0 0 0 0 0 0 0 0 0 0 0 0	Combur 10 Other Brands Target value						
	At a hemoglobin concentration of 0.075 mg/dL, Combur-Test <sup>®</sup> strips were the only brand to register a correct analysis with ascorbic acid levels as high as 400 mg/L <sup>1</sup>	At a glucose concentration of 300 mg/L, Combur- Test <sup>®</sup> strips were the only brand to show consistently accurate results, even at an ascorbic acid level of 1000 mg/L <sup>1</sup>						
Additional diazonium salt impregnated mesh	Improves reagent stability in the leukocyte test pad							
Absorbent paper	Prevents chemical interference							
Low test detection limits	High sensitivity and specificity With no ascorbic acid present, only three out of five hemoglobin and glucose concentrations of 0.03 mg/d	e tests were able to detect pathologically relevant low IL and 50 mg/dL, respectively <sup>1</sup>						

**Reliable visual evaluation** 

### References

1. Nagel, D., Seiler, D., Hohenberger, E.F., Ziegler, M. (2006). Investigations of ascorbic acid interference in urine test strips. Clin Lab; 52:149-153.

Reading of all test pads at once at a consistent reading time

Colorfast printing colors on the label

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## **Combur-Test<sup>®</sup> strips<sup>\*</sup>**

Precise, secure and easy



A quality choice for professional use.

#### Be on the safe side

Be independent from interferences of glued components as a result of an unique sealing technology

#### **Be accurate**

Detect even low concentrations of erythrocytes/hemoglobin (5-10 Ery/µL)

#### **Be specific**

Stop test area colors from running through an absorbent paper

#### Find an immediate answer to ascorbic acid

Avoid retesting and prevent false-negative results in glucose and blood even under high levels of ascorbic acid (up to 750 mg/L) with the application of an iodate impregnated mesh layer

#### **Results you can trust**

Reduce risk of false results through compensation of strong intrinsic urine coloration with the availability of a color compensation pad \*\*

#### **Choose the easy way**

Ease analysis of results with a consistent reading time of 60 seconds for all parameters. Benefit from advanced and hygienic strip handling with possibility of reading tip down





## **Combur-Test® strips\*** *Technical specifications*

Parameter combinations	Parameters										
	Nam	e SG	pН	LEU	NIT	PRO	GLU	KET	UBG	BIL	BL
	Combur <sup>2</sup> Tes	t		•	•						
	Combur <sup>3</sup> Tes	t	٠			•	•				
	Combur <sup>3</sup> Test					٠	٠				•
	Combur⁴ Tes	t	•		٠	٠	•				
	Combur⁵ Tes	t		•	٠	٠	٠				•
	Combur <sup>6</sup> Tes	t		•	٠	٠	٠		•		•
	Combur <sup>7</sup> Tes	t	٠	•	•	•	٠	•			•
	Combur <sup>9</sup> Tes	t	٠	•	٠	•	٠	•	•	•	•
	Combur <sup>10</sup> Tes	t	٠	•	٠	٠	٠	•	•	•	•
			Local availability might differ, please check with your loca representative								
Test construction	Composition	Reage a thin	Reagent paper and underlying absorbent paper are sealed with a thin porous nylon mesh and fixed to a carrier foil								
	Nylon mesh features	Protection from strip contamination. Homogenous liquid distribution and uniform development. Prevention from falsification of the color by glue						color			
	Practical detection limit	Detec chang in the	ction I ges in test a	imit is the uri area	made ne are	e such e made	that visibl	even s e by a	slight   clear (	pathol color c	ogical hange
Vial construction	Composition	Prote	ction o filled	of test s cap	trips f	rom at	mospl	neric h	umidit	y with	drying
	Color Scale	Speci and r	al col eliable	orfast µ e evalua	orintir ation	ng colo of the	ors on results	the vi sy	al labe	allov	v easy

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\*\* Only available for instrument tests

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