



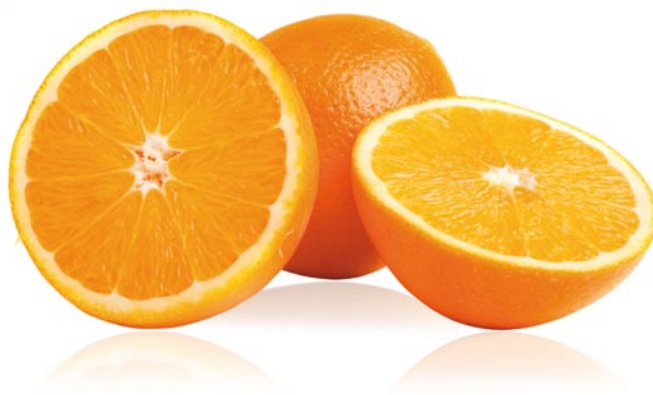
Urinalysis from Roche

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 (≥ 400 mg/L) in a significant proportion of a routinely tested population¹

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®



Life needs answers

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 ² Elimination via the urine Renal threshold: plasma ascorbate concentrations of about 1.2-1.8 mg/dL corresponding to 60 mg doses per day ³⁻⁶ Average body tissue of an adult stores 1.2-2.0 g presumably maintained by taking 60-75 mg per day ^{3-5,7,8}
RDA*	90 mg per day for an adult male (set by the US Food and Nutrition Board in 2000) ⁹ Ingestion of 60 mg/day prevents the development of scurvy for 30-45 days with a diet lacking vitamin C ^{3,4,7,8}
Sources	Natural: fresh fruits and vegetables, e.g., oranges, lemons, grapefruits, watermelons, papayas, strawberries, green leafy vegetables, tomatoes, broccoli, etc. Synthetic: used in vitamin preparation, as preservative and antioxidant (e.g., E300, E301, E302, E303, E304), discoloration inhibitor, supplement in tablets, food additive
Consumption	The most frequently used vitamin supplement in the world ¹⁰ Worldwide annual demand in 1995 was evaluated at 60.000 tons ¹¹
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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4. Baker, E.M., Hodges, R.E., Hood, J., Sauberlich, H.E., March, S.C., Canham, J.E. (1971). Metabolism of 14C- and 3H-labeled L-ascorbic acid in human scurvy. *Am J Clin Nutr*; 24:444-454.
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8. Hodges, R.E., Hood, J., Canham, J.E., Sauberlich, H.E., Baker, E.M. (1971). Clinical manifestations of ascorbic acid deficiency in man. *Am J Clin Nutr*; 24:432-443.
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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

Judge at one glance

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

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

Ensure comparability

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

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

Secure your investment

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



cobas[®]
Life needs answers

cobas u 411 analyzer

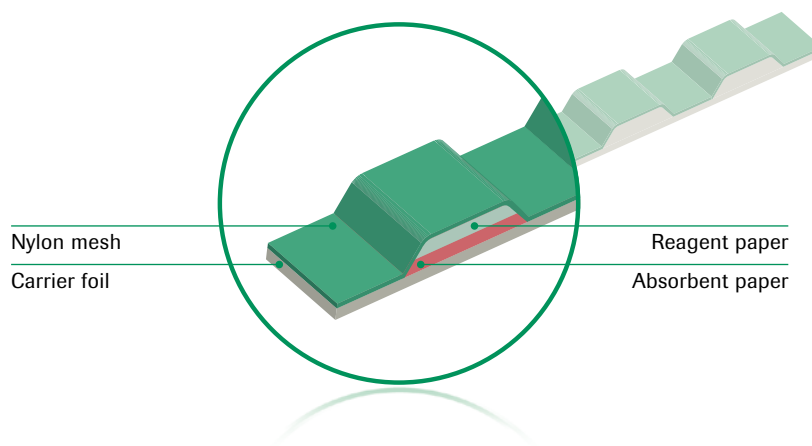
Technical specifications

Instrument	System	Semi-automated urine test strip analyzer
	Type	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 ¹⁰ Test [®] M
	Parameters	Specific gravity, pH, leukocytes, nitrite, protein, glucose, ketones, urobilinogen, bilirubin, blood (erythrocytes/hemoglobin), color
	Calibration	Control-Test M calibration strip
Connectivity	System interfaces	Serial interfaces to barcode reader, sediment terminal and PC/Host; USB Slot
	Host protocols	ASTM + and Urisys [®] 2400 ASTM
	Sample identification	Sample ID via manual entry, barcode reader or download from host
Accessories	Type	Barcode reader, Sediment Terminal
	Supported barcode types	Code 39, Code 128, NW 7 (Codabar), ITF (Interleaved 2 of 5)

* Combur Test[®] strips are marketed under Chemstrip[®] in United States and Canada.

Combur-Test® 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

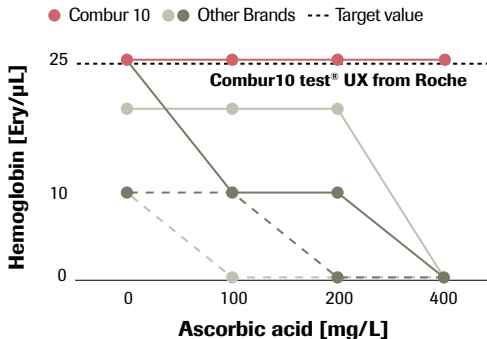
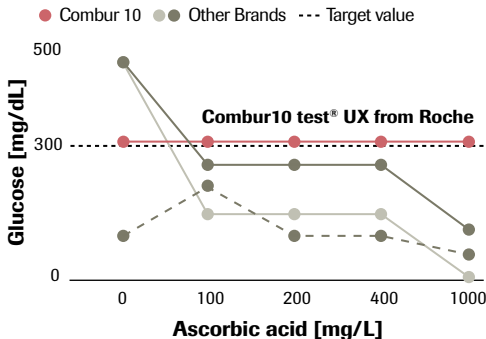
Provide a basis for standardized diagnostic procedures with the application of high-quality urine test strips based on years of research and development



Life needs answers

Combur-Test® 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																																												
Iodate impregnated component	Protects blood and glucose test areas efficiently from ascorbic acid interference and false-negative results by oxidation even at high concentrations of vitamin C. When five common 10 parameter urine test strips are compared, Combur-Test® strip showed the highest resistance to ascorbic acid interference at higher hemoglobin or glucose concentrations ¹ : Ascorbic acid interference in routine analysis Hemoglobin (Target value of 0.075 mg/dL = 25 Ery/μL)  <table><caption>Hemoglobin [Ery/μL] vs Ascorbic acid [mg/L]</caption><tr><th>Ascorbic acid [mg/L]</th><th>Combur 10 [Ery/μL]</th><th>Other Brands [Ery/μL]</th><th>Target value [Ery/μL]</th></tr><tr><td>0</td><td>25</td><td>18</td><td>25</td></tr><tr><td>100</td><td>25</td><td>10</td><td>25</td></tr><tr><td>200</td><td>25</td><td>10</td><td>25</td></tr><tr><td>400</td><td>25</td><td>0</td><td>25</td></tr></table> Glucose (Target value of 300 mg/dL)  <table><caption>Glucose [mg/dL] vs Ascorbic acid [mg/L]</caption><tr><th>Ascorbic acid [mg/L]</th><th>Combur 10 [mg/dL]</th><th>Other Brands [mg/dL]</th><th>Target value [mg/dL]</th></tr><tr><td>0</td><td>300</td><td>450</td><td>300</td></tr><tr><td>100</td><td>300</td><td>250</td><td>300</td></tr><tr><td>200</td><td>300</td><td>150</td><td>300</td></tr><tr><td>400</td><td>300</td><td>150</td><td>300</td></tr><tr><td>1000</td><td>300</td><td>0</td><td>300</td></tr></table> At a hemoglobin concentration of 0.075 mg/dL, Combur-Test® strips were the only brand to register a correct analysis with ascorbic acid levels as high as 400 mg/L ¹ At a glucose concentration of 300 mg/L, Combur-Test® strips were the only brand to show consistently accurate results, even at an ascorbic acid level of 1000 mg/L ¹	Ascorbic acid [mg/L]	Combur 10 [Ery/μL]	Other Brands [Ery/μL]	Target value [Ery/μL]	0	25	18	25	100	25	10	25	200	25	10	25	400	25	0	25	Ascorbic acid [mg/L]	Combur 10 [mg/dL]	Other Brands [mg/dL]	Target value [mg/dL]	0	300	450	300	100	300	250	300	200	300	150	300	400	300	150	300	1000	300	0	300
Ascorbic acid [mg/L]	Combur 10 [Ery/μL]	Other Brands [Ery/μL]	Target value [Ery/μL]																																										
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200	300	150	300																																										
400	300	150	300																																										
1000	300	0	300																																										
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 tests were able to detect pathologically relevant low hemoglobin and glucose concentrations of 0.03 mg/dL and 50 mg/dL, respectively ¹																																												
Reliable visual evaluation	Colorfast printing colors on the label Reading of all test pads at once at a consistent reading time																																												

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.

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Combur-Test[®] strips*

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

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

Be accurate

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

Results you can trust

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

Be specific

Stop test area colors from running through an absorbent paper

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



cobas[®]

Life needs answers

Combur-Test® strips*

Technical specifications

Parameter combinations

Parameters	Name
	Combur ² Test
	Combur ³ Test
	Combur ³ Test E
	Combur ⁴ Test
	Combur ⁵ Test
	Combur ⁶ Test
	Combur ⁷ Test
	Combur ⁹ Test
	Combur ¹⁰ Test

SG	pH	LEU	NIT	PRO	GLU	KET	UBG	BIL	BL
		•	•						
	•			•	•				
				•	•				•
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•	•	•	•	•	•	•	•	•	•

Local availability might differ, please check with your local representative

Test construction

Composition
Nylon mesh features
Practical detection limit

Reagent paper and underlying absorbent paper are sealed with a thin porous nylon mesh and fixed to a carrier foil

Protection from strip contamination.
Homogenous liquid distribution and uniform color development.
Prevention from falsification of the color by glue

Detection limit is made such that even slight pathological changes in the urine are made visible by a clear color change in the test area

Vial construction

Composition
Color Scale

Protection of test strips from atmospheric humidity with drying agent filled cap

Special colorfast printing colors on the vial label allow easy and reliable evaluation of the results

* Combur Test® strips are marketed under Chemstrip® in United States and Canada.
** Only available for instrument tests