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 population.

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®.

Roche
Cobas®
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
Elimination via the urine
Renal threshold: plasma ascorbate concentrations of about 1.2–1.8 mg/dL corresponding to 60 mg doses per day
Average body tissue of an adult stores 1.2–2.0 g presumably maintained by taking 60–75 mg per day

**RDA**
90 mg per day for an adult male (set by the US Food and Nutrition Board in 2000)
Ingestion of 60 mg/day prevents the development of scurvy for 30–45 days with a diet lacking vitamin C

**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
Worldwide annual demand in 1995 was evaluated at 60,000 tons

**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**
**Combur-Test® strip technology**

*Accurate, safe and protective*

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**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.

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*Roche*  
*Life needs answers*
**Combur-Test® strip technology**

**Specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Characteristics</th>
</tr>
</thead>
</table>
| 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 . |

**Ascorbic acid interference in routine analysis**

<table>
<thead>
<tr>
<th>Component</th>
<th>Target value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin</td>
<td>0.075 mg/dL = 25 Ery/µL</td>
</tr>
<tr>
<td>Glucose</td>
<td>300 mg/dL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ascorbic acid [mg/L]</th>
<th>Hemoglobin [Ery/µL]</th>
<th>Glucose [mg/dL]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>200</td>
<td>20</td>
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<tr>
<td>400</td>
<td>40</td>
<td>300</td>
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<tr>
<td>500</td>
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</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. 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.

<table>
<thead>
<tr>
<th>Additional diazonium salt impregnated mesh</th>
<th>Improves reagent stability in the leukocyte test pad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absorbent paper</td>
<td>Prevents chemical interference</td>
</tr>
<tr>
<td>Low test detection limits</td>
<td>High sensitivity and specificity</td>
</tr>
<tr>
<td>Reliable visual evaluation</td>
<td>Colorfast printing colors on the label</td>
</tr>
</tbody>
</table>

**References**

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

**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

<table>
<thead>
<tr>
<th>Parameter combinations</th>
<th>Parameters</th>
<th>Name</th>
<th>SG</th>
<th>pH</th>
<th>LEU</th>
<th>NIT</th>
<th>PRO</th>
<th>GLU</th>
<th>KET</th>
<th>UBG</th>
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<tbody>
<tr>
<td></td>
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<td>Combur² Test</td>
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</tbody>
</table>

Local availability might differ, please check with your local representative.

### Test construction

#### Composition
- 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 color development.
- Prevention from falsification of the color by glue.

#### Practical detection limit
- 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
- Protection of test strips from atmospheric humidity with drying agent filled cap.

#### Color Scale
- Special colorfast printing colors on the vial label allow easy and reliable evaluation of the results.

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

** Only available for instrument tests
Urisys® 1100 analyzer
Connected, compact and intuitive

**Rule out your doubts**
Minimize potential transcription errors through convenient data input via barcode reader

**Learn at your pace**
Conduct self-trainings anytime with existing training CD (available in English, German and Spanish)

**Simplify your life**
Eliminate manual documentation through export of data over host connection

**Peace and calmness for everyone**
Guarantee friendly environment with quiet operations

**Be safe**
Prevent unauthorized access and comply with accreditation requirements by an operator lock-out feature

**Centralize initialization** *(cobas IT 1000 solution required)*
Change general instrument settings for several analyzers from a central area
# Urisys® 1100 analyzer

## Technical specifications

<table>
<thead>
<tr>
<th>Instrument</th>
<th>System</th>
<th>Type</th>
<th>Measuring system</th>
<th>Throughput</th>
<th>Memory</th>
<th>User interface</th>
<th>Printer</th>
<th>Certificates</th>
<th>Physical dimensions</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Semi-automated urine test strip analyzer</td>
<td>Reflectance photometer</td>
<td>Wave lengths: 565 nm, 610 nm</td>
<td>Approx. 50 test strips/h (normal mode)</td>
<td>Approx. 100 test strips/h (fast mode)</td>
<td>100 results</td>
<td>Liquid Crystal Display (LCD), 2 lines of 24 characters</td>
<td>Thermal printer</td>
<td>CE, UL, CUL</td>
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<td>Height: 9.5 cm</td>
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</table>

### Strips*

<table>
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<tr>
<th>Parameters</th>
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<th>LEU</th>
<th>NIT</th>
<th>PRO</th>
<th>GLU</th>
<th>KET</th>
<th>UBG</th>
<th>BIL</th>
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<tbody>
<tr>
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<tr>
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<td>Combur® Test UX</td>
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</tbody>
</table>

### Connectivity

<table>
<thead>
<tr>
<th>System interfaces</th>
<th>5-pin DIN socket for keyboard and barcode reader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host protocols</td>
<td>Unidirectional, bidirectional or ASTM (selectable)</td>
</tr>
<tr>
<td>Sample identification</td>
<td>Sample ID via keyboard entry or barcode reader</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Type</th>
<th>Supported barcode types</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Code 39, Code 128, NW 7 (Codabar), ITF (Interleaved 2 of 5)</td>
</tr>
</tbody>
</table>

*Combur Test® strips are marketed under Chemstrip® in United States and Canada. Combur® Test® and Combur® Test® are not available in some countries.*