



**Is vitamin C interfering with  
patient urinalysis results?**  
*Say goodbye to vitamin C worries—  
with Chemstrip<sup>®</sup> urine test strips.*



**cobas<sup>®</sup>**  
*Life needs answers*

# Why is vitamin C (ascorbic acid) in urine a common problem?

- **Because vitamin C is everywhere.**

Not only in well-known sources such as fruits, vegetables, juice drinks and multivitamin supplements. It can also be found in everything from cereals and chips to potato salad and soup. In fact:

- A bowl of fortified whole-grain cereal can contain more vitamin C than the juice from one orange.<sup>1</sup>
- A fast-food chicken sandwich can contain more vitamin C than an 8-ounce glass of lemonade.<sup>1</sup>
- Ascorbic acid (or sodium ascorbate, an alternative form) is widely used to preserve taste or color in certain foods and beverages—and to prevent microbial growth in cured meats.<sup>2,3</sup>
- An estimated 40% of Americans regularly use a vitamin supplement (70% do so at least occasionally)—and some of the most commonly used supplements are multivitamins and vitamin C.<sup>4</sup>



- **Vitamin C can interfere with urinalysis results.**

At high concentrations in urine samples, vitamin C can produce false negative results—particularly with regard to glucose or blood (hemoglobin).<sup>5</sup>

- **False-negative results can lead to costly and dangerous missed diagnoses.**

Serious conditions can go undetected if you use urine test strips that don't compensate for potential vitamin C interference with glucose and/or hemoglobin detection.

These conditions could include:<sup>6</sup>

- Diabetes
- Kidney damage
- Kidney or bladder stones
- Kidney or bladder cancer

Questionable results can lead to inconvenience and cost for unbillable re-tests. Worse, they can mean a delay in appropriate treatment.

## Vitamin C content of various foods (mg)<sup>1</sup>

2 potato pancakes	42
Juice from 1 orange	43
1 cup frozen asparagus (boiled)	44
Bowl of fortified corn flakes	60

Many people are surprised to learn that a cup of frozen vegetables or a bowl of corn flakes contains more vitamin C than the juice from 1 orange.

**The solution: Chemstrip® urine test strips—for visual analysis *or* for automated testing with the Urisys 1100® urine analyzer**

Only Chemstrip urine test strips let you say goodbye to vitamin C worries. That's because they're designed with an iodate-impregnated mesh layer that *oxidizes* ascorbic acid and **virtually eliminates the possibility for vitamin C interference.\***

Other urine test strips may instead include a test pad to *detect* ascorbic acid in urine.<sup>7,8</sup> Patients who test positive for ascorbic acid may be asked to return for a re-test.<sup>8</sup>

But when you use Chemstrip test strips, you and your patients avoid this inconvenience—and you can be confident in the results from each urine test. This can help ensure timely, appropriate therapy decisions and potentially aid in earlier diagnosis of serious conditions.



The CLIA-waived Urisys 1100 urine analyzer analyzes and prints a comprehensive urinalysis profile in about 70 seconds.

**5 reasons to choose Chemstrip urine test strips:<sup>9</sup>**

- 1** Help avoid potentially costly consequences of missed diagnoses by virtually eliminating vitamin C interference on the glucose and blood pads.\*
- 2** Help avoid false negatives by detecting acetoacetic acid *and* acetone on the ketone reagent pad.
- 3** Simplify and streamline testing—all reagent pads are read at one time, between 1-2 minutes after dipping.
- 4** Promote safe and hygienic testing practice—fingers stay clear of specimen.
- 5** Generate confidence in test result accuracy—Chemstrip construction ensures uniform liquid penetration and prevents runover onto adjacent pads.



**Chemstrip® 10 MD urine test strips**

**Chemstrip 10 MD test strip**

Diazonium salt impregnated mesh  
*for improved sensitivity*

Double layered  
*for improved resolution and sensitivity*

**Impregnated with iodate**  
*to help eliminate Vitamin C interference that can mask presence of glucose or blood in urine (see package insert)*

Plastic carrier

Absorbent pad layer

Reagent pad layer

Mesh laminate  
*holds pads in place for consistent diffusion and to prevent runover*

Specific Gravity

pH

Leukocytes

Nitrite

Protein

**Glucose**

Ketones

Urobilinogen

Bilirubin

**Blood**

Compensation Pad  
*(corrects for strong urine color)*

\*Please see the package insert for details.

## Chemstrip technology outstrips the competition.

With up to 400 mg/L ascorbic acid in a urine specimen, only Chemstrip urine test strips detect clinically relevant concentrations of 50 mg/dL glucose, as well as higher hemoglobin concentrations.<sup>5</sup>

Test strip	Glucose 50 mg/dL					Hemoglobin 0.03 mg/dL=10 Ery/ $\mu$ L				
	Ascorbic Acid (mg/L)					Ascorbic Acid (mg/L)				
	0	100	200	400	1000	0	100	200	400	1000
<b>Roche Chemstrip 10 MD</b>	<b>100</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>0</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>0</b>
Bayer Multistix 10SG (from Siemens)	0	0	0	0	0	<b>10</b>	<b>10</b>	0	0	0
Macherey & Nagel Medi-Test Combi 10 SGL	<b>50</b>	<b>50</b>	0	0	0	<b>10</b>	0	0	0	0
Arkray, Inc. Aution 10 EA	0	0	0	0	0	0	0	0	0	0
YD Diagnostics Uriscan 10 SGL	<b>100</b>	0	0	0	0	0	0	0	0	0

## Choose the Chemstrip product(s) that meets your testing needs

### Urine Testing Products: Comparison Chart

	Spec. Gravity	pH	Leukocytes	Nitrite	Protein	Glucose	Ketones	Urobilinogen	Bilirubin	Blood
<b>Roche Product</b> (catalog number)										
<b>Bayer Product</b>										
<b>Chemstrip<sup>®</sup> 10 MD<sup>†</sup></b> (03260763160)	■	■	■	■	■	■	■	■	■	■
<b>Chemstrip 10 SG</b> (11895362160)	■	■	■	■	■	■	■	■	■	■
Multistix <sup>®</sup> 10 SG	■	■	■	■	■	■	■	■	■	■
<b>Chemstrip 9</b> (11895427160)		■	■	■	■	■	■	■	■	■
Multistix <sup>®</sup> 9		■	■	■	■	■	■	■	■	■
Multistix <sup>®</sup> 9 SG	■	■	■	■	■	■	■		■	■
<b>Chemstrip 7<sup>†</sup></b> (11008552160)		■	■	■	■	■	■			■
Multistix <sup>®</sup> 7		■	■	■	■	■	■			■
Multistix <sup>®</sup> 8 SG	■	■	■	■	■	■	■			■
<b>Chemstrip 5 OB<sup>†</sup></b> (11893467160)			■	■	■	■				■
Uristix <sup>®</sup> 4			■	■	■	■				■
<b>Chemstrip 2 GP</b> (11895397160)					■	■				
<b>Chemstrip 2 LN</b> (11895460160)			■	■						
Multistix <sup>®</sup> 2			■	■						

<sup>†</sup>Can be used visually, or with the Urisys 1100 urine analyzer.

## Ordering information

To purchase Chemstrip urine testing products, call Roche at 1-800-852-8766 or contact your local distributor.

For Roche Technical Support, call 1-800-428-4674. Visit online anytime at [www.poc.roche.com](http://www.poc.roche.com).

<sup>1</sup> USDA National Nutrient Database for Standard Reference, Release 23. Vitamin C, total ascorbic acid (mg) Content of Selected Foods.

<sup>2</sup> Center for Science in the Public Interest. Available at [www.cspinet.org/reports/chemcuisine.htm#ascorbicacid](http://www.cspinet.org/reports/chemcuisine.htm#ascorbicacid). Accessed November 30, 2011.

<sup>3</sup> Parks N. How is ascorbic acid used in food? Available at [www.livestrong.com/article/491522-how-is-ascorbic-acid-used-in-food/](http://www.livestrong.com/article/491522-how-is-ascorbic-acid-used-in-food/). Accessed November 14, 2011.

<sup>4</sup> Hathcock J, Azzi A, Blumberg J et al. Vitamins E and C are safe across a broad range of intakes. *Am J Clin Nutr.* 2005;81:736-745.

<sup>5</sup> Nagel D, Seiler D, Hohenberger EF, Ziegler M. Investigations of Ascorbic Acid Interference in Urine Test Strips. *Clin. Lab.* 2006;52:149-153.

<sup>6</sup> Mayo Clinic. Urinalysis. Available at <http://www.mayoclinic.com/health/urinalysis/MY00488>. Accessed October 3, 2011.

<sup>7</sup> Medi-Test Urine Test Sticks Combi 10<sup>®</sup> L [package insert]. Düren, Germany: Macherey-Nagel GmbH & Co. KG; 2011.

<sup>8</sup> Urispec<sup>™</sup> 11-Way Test Strips. Henry Schein Medical Products [catalog 08MS7796-01]. Melville, NY: Henry Schein, Inc.; 2008.

<sup>9</sup> Chemstrip 10 MD Urine Test Strips [package insert 0 5860628001(01)]. Indianapolis, In: Roche Diagnostics Corporation; 2010.

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Roche Diagnostics  
9115 Hague Road  
Indianapolis, IN 46256  
[www.poc.roche.com](http://www.poc.roche.com)