

# APPLICATION

## Sugar Analysis from Milk using Luna<sup>®</sup> Omega SUGAR LC Columns

Laura Snow, Zeshan Aqeel, and Cicely Zhu  
Phenomenex, Inc., 411 Madrid Ave., Torrance, CA 90501 USA

### Overview

Sugar content testing is a commonly performed analysis in food laboratories. Determining sugar content is particularly important for milk where lactose is the main sugar present. While lactose is a significant energy source in milk, individuals who are lactose-intolerant have a lactase enzyme deficiency and cannot fully digest lactose. Using the Luna Omega SUGAR column, six sugars and one sugar alcohol were separated in ten minutes. Using the Luna Omega SUGAR column, we were able to analyze sugars in a variety of cow's milk, lactose free milk, and infant formula.

### Sample Preparation

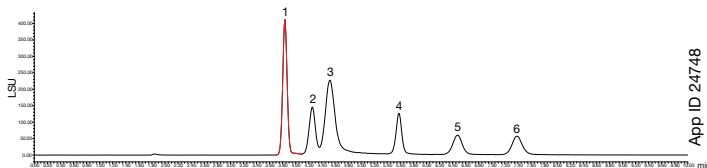
1. Pipet 1 mL milk sample into a tube.
2. Slowly add 3 mL of chilled acetone while vortexing continuously.
3. Continue vortexing ~ 30 seconds.
4. Allow samples to continue precipitating for 30 minutes.
5. Centrifuge samples for 10 minutes at max rpm.
6. Pour the supernatant off the top to transfer to additional tube.
7. Filter supernatant with a 0.45  $\mu$ m PTFE syringe filter followed by a 0.2  $\mu$ m PTFE syringe filter. (0.2  $\mu$ m filtration step was to ensure no clogging of the UHPLC system. 0.45  $\mu$ m filtration may be sufficient for HPLC systems.)

### LC-ELSD Conditions

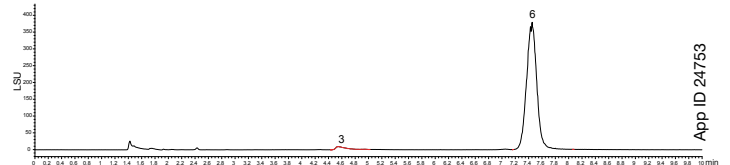
Conditions for all samples:

- Column:** Luna Omega 3  $\mu$ m SUGAR
- Dimension:** 150 x 4.6 mm
- Part No.:** 00F-4775-E0
- Mobile Phase:** Acetonitrile Water (75:25)
- Flow Rate:** 1 mL/min
- Temperature:** 35  $^{\circ}$ C
- Injection Volume:** 5  $\mu$ L
- Detection:** ELSD
- Sample:**
  1. Fructose
  2. Glucose
  3. Galactose
  4. Sucrose
  5. Maltose
  6. Lactose
  7. Myo-inositol

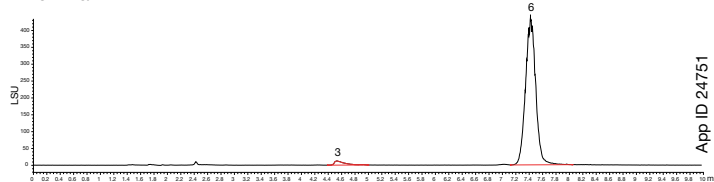
Standards



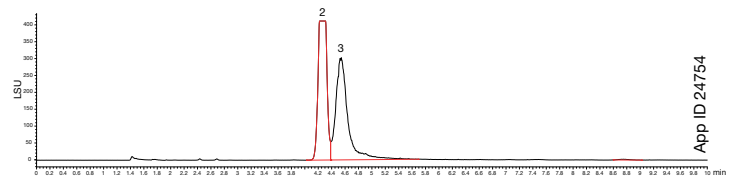
2% Milk



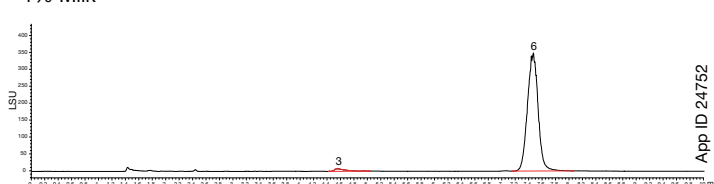
Non-Fat Milk



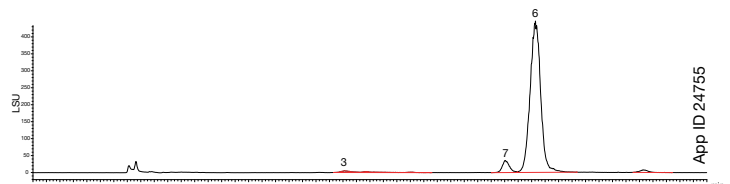
Lactose Free



1% Milk



Infant Formula



# APPLICATION

## Luna<sup>®</sup> Omega SUGAR Ordering Information

| 3 µm Minibore Columns (mm) |             |             |             | SecurityGuard <sup>™</sup><br>Cartridges (mm) |
|----------------------------|-------------|-------------|-------------|-----------------------------------------------|
| Phases                     | 50 x 2.1    | 100 x 2.1   | 150 x 2.1   | 4 x 2.0*                                      |
|                            |             |             |             | /10pk                                         |
| <b>Sugar</b>               | 00B-4775-AN | 00D-4775-AN | 00F-4775-AN | AJ0-4496                                      |
|                            |             |             |             | for ID: 2.0-3.0 mm                            |

| 3 µm MidBore <sup>™</sup> Columns (mm) |             | SecurityGuard <sup>™</sup><br>Cartridges (mm) |
|----------------------------------------|-------------|-----------------------------------------------|
| Phases                                 | 150 x 3.0   | 4 x 2.0*                                      |
|                                        |             | /10pk                                         |
| <b>Sugar</b>                           | 00F-4775-Y0 | AJ0-4496                                      |
|                                        |             | for ID: 2.0-3.0 mm                            |

| 3 µm Analytical Columns (mm) |             |             |             | SecurityGuard <sup>™</sup><br>Cartridges (mm) |
|------------------------------|-------------|-------------|-------------|-----------------------------------------------|
| Phases                       | 100 x 4.6   | 150 x 4.6   | 250 x 4.6   | 4 x 3.0*                                      |
|                              |             |             |             | /10pk                                         |
| <b>Sugar</b>                 | 00D-4775-E0 | 00F-4775-E0 | 00G-4775-E0 | AJ0-4495                                      |
|                              |             |             |             | for ID: 3.2-8.0 mm                            |

\* SecurityGuard Standard Analytical Cartridges require holder, Part No.: KJ0-4282



### Australia

t: +61 (0)2-9428-6444  
auinfo@phenomenex.com

### Austria

t: +43 (0)1-319-1301  
anfrage@phenomenex.com

### Belgium

t: +32 (0)2 503 4015 (French)  
t: +32 (0)2 511 8666 (Dutch)  
beinfo@phenomenex.com

### Canada

t: +1 (800) 543-3681  
info@phenomenex.com

### China

t: +86 400-606-8099  
cninfo@phenomenex.com

### Denmark

t: +45 4824 8048  
nordicinfo@phenomenex.com

### Finland

t: +358 (0)9 4789 0063  
nordicinfo@phenomenex.com

### France

t: +33 (0)1 30 09 21 10  
franceinfo@phenomenex.com

### Germany

t: +49 (0)6021-58830-0  
anfrage@phenomenex.com

### India

t: +91 (0)40-3012 2400  
indiainfo@phenomenex.com

### Ireland

t: +353 (0)1 247 5405  
eireinfo@phenomenex.com

### Italy

t: +39 051 6327511  
italiainfo@phenomenex.com

### Luxembourg

t: +31 (0)30-2418700  
nlinfo@phenomenex.com

## www.phenomenex.com

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### Mexico

t: 01-800-844-5226  
tecnicomx@phenomenex.com

### The Netherlands

t: +31 (0)30-2418700  
nlinfo@phenomenex.com

### New Zealand

t: +64 (0)9-4780951  
nzinfo@phenomenex.com

### Norway

t: +47 810 02 005  
nordicinfo@phenomenex.com

### Portugal

t: +351 221 450 488  
ptinfo@phenomenex.com

### Singapore

t: +65 800-852-3944  
sginfo@phenomenex.com

### Spain

t: +34 91-413-8613  
espinfo@phenomenex.com

### Sweden

t: +46 (0)8 611 6950  
nordicinfo@phenomenex.com

### Switzerland

t: +41 61 692 20 20  
swissinfo@phenomenex.com

### United Kingdom

t: +44 (0)1625-501367  
ukinfo@phenomenex.com

### USA

t: +1 (310) 212-0555  
info@phenomenex.com

### All other countries Corporate Office USA

t: +1 (310) 212-0555  
info@phenomenex.com



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### Trademarks

Luna is a registered trademark, and SecurityGuard and MidBore are trademarks of Phenomenex.

SecurityGuard is patented by Phenomenex. U.S. Patent No. 6,162,362

CAUTION: this patent only applies to the analytical-sized guard cartridge holder, and does not apply to SemiPrep, PREP or ULTRA holders, or to any cartridges.

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