HORIBA

LAQUAtwin Ca²⁺

Measurement Of Calcium In Milk And Milk Beverages

LAQUAtwin is a series of pocket ION meters. Using Ion Selective Electrode (ISE) technology, they are available for measuring Conductivity, Calcium, Nitrate, Potassium, Sodium, Salt concentration and pH measurement. Using just a tiny amount of sample, the LAQUAtwin proprietary flat sensors can quickly and accurately measure the values of the chemical parameters in the field.

Introduction

It is often necessary to determine the calcium content of milk and milk beverages. This may be done by atomic absorption spectroscopy (AA) or inductively coupled plasma atomic emission spectroscopy (ICP). Alternatively, by ionizing protein-bound calcium using an acidizing pretreatment, the LAQUAtwin Ca2+ can be used to measure the total amount of calcium easily.

The LAQUAtwin Ca2+ meter is used as check to determine the Calcium content of milk products before selling to consumers. This is an easy, quick method to check the amount of calcium in lactic products.

Method

Pretreatment procedure (for milk)

Acidify the milk with hydrochloric acid (HCl) to a pH of between 4.3 and 4.6 (which can be determined by use of the LAQUAtwin pocket pH meter). Wait for the solution to precipitate and use the liquid part of the sample for the test. A small sample of the solution is placed on the sensor of the LAQUAtwin Ca2+ and measured. To repeat sampling, wash with diluted soap water and pat dry with a paper tissue.

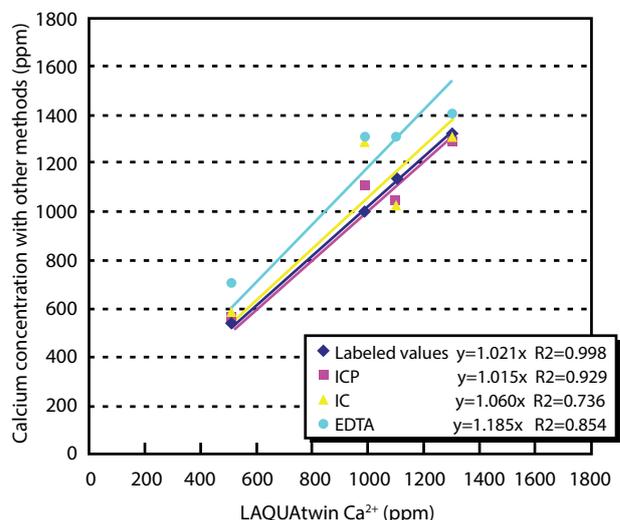**Pretreatment procedure (for milk beverages such as lactic drinks)**

Acidify the lactic drink with hydrochloric acid (HCl) and use the LAQUAtwin pH meter to confirm it has a pH of about 2. Then, dilute this sample and add tris-hydroxy-aminomethane so that the solution has a pH value between 4.3 and 4.6. Wait for the solution to precipitate and use the liquid to sample. A small sample of the solution is placed on the sensor of the LAQUAtwin Ca2+ and measured. To repeat sampling, wash with diluted soap water and pat dry with a paper tissue.

Results and Benefits

The use of accurate Calcium ion testing in controlling the quality and calcium content of lactic products ensures that consumers are accurately able to gauge their calcium intake. This is especially beneficial for those who are lactose intolerant.

The LAQUAtwin Ca2+ pocket meter is small and compact; convenient to carry around the marketplace for easy on-site testing. Its easy-to-use interface is simple for anyone to use the LAQUATwin Ca2+ pocket meter.

[1]Correlation of Calcium concentration between LAQUAtwin Ca²⁺ and other methods

Y-axis: Calcium concentration with other methods (ppm)
X-axis: LAQUAtwin Ca²⁺ (ppm)

Series	Equation	R²
Labeled values	y=1.021x	R2=0.998
ICP	y=1.015x	R2=0.929
IC	y=1.060x	R2=0.736
EDTA	y=1.185x	R2=0.854

[1] Internal study by HORIBA labs, 2013

Pocket ION Meter

LAQUAtwin

Unique Features

Calibrate and measure at the touch of a button—the smiley face will tell you when the result can be read.

Hassle-free automatic calibration with a few drops of standard solution reassures you of your measurement accuracy. Two-point calibration is also possible.[*1]

*1 Except for B-711

LAQUAtwin is fully waterproof and dustproof.

The meter and sensor are fully waterproof[*3] and dustproof, so you can take it anywhere.

*3 IP67 rated. Will withstand immersion for 30 minutes at 1 m. Not suitable for underwater use.

LAQUAtwin: the only meters with flat sensor technology.

HORIBA's highly-sensitive, flat sensor technology opens up new possibilities for sampling and sample types. Only a small amount of sample is required, so you can easily sample in situ without the need for beakers or other labware. Sensors are easily replaced as required.

Carry case comes as standard for handy portability.

The compact carry case contains everything you need for your measurements, including the standard solution and sampling sheets.

1 X 6

One meter, six methods.

Only LAQUAtwin allows you to be this flexible!
Choose the best method according to your sample, your situation, and your needs.

01 Immersion
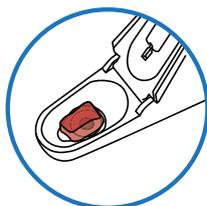When you're in the lab, you can test the sample in a breaker. Ensure the sensor guard sliding cap is open.

02 Scoop
Use as a scoop to test water eg from a river. A vertical scoop for an aquarium is also available with a unique sensor guard.

03 Drops
Place a drop of the sample onto the sensor with a pipette. Laquatwin meters can measure sample volume as low as 0.1mL

04 Solid Samples
Foods containing some moisture can be tested by placing a small piece directly onto the sensor.

05 Powders
Laquatwin meters can also test dry powders. Simply place the powder sample onto the sensor and drop on your defined volume of pure water.

06 Paper and textiles
To test sheets of paper and textiles, cut up the sample into small pieces and place directly onto the sensor. Drop on your defined volume of pure water.

Lineup

pH
Accurate pH measurements in a few seconds, from a single drop.

Water pH varies in different environments, and a slight change can often have a major effect.

Whether you need to keep the pH of an aquarium within tight limits, are checking for the acidity of rain water or for the quality of meat and fish products, LAQUAtwin compact pH meters are ideal for you. No matter where and when you need to test.

COND
Determine water conductivity with as little as 0.12 mL of sample.

The conductivity of rain water is a trusted guide to determining atmospheric purity. In agriculture, measuring the conductivity of soil allows farmers and agronomists to determine optimum fertilizer usage and check the 'health' of soil after salt water damage. The LAQUAtwin meter makes conductivity testing simple, anywhere.

Na+
Only compact meter for a quick and reliable measurement of sodium ion at the scene using ion selective membrane.

K+
Only compact meter for a quick and reliable measurement of potassium ion at the scene using ion selective membrane.

NO3–
Only compact meter for a quick and reliable measurement of nitrate ion at the scene. Special application packages for crop (B-741) and soil (B-742) are also available.

Ca2+
Only compact meter for a quick and reliable measurement of ionized calcium at the scene using ion selective membrane.

http://www.horiba.com/laquatwin

IMS
HORIBA Group is operating Integrated Management System (IMS)
ISO9001 JOA-0298 / ISO14001 JOA-E-90039 / ISO13485
JOA-MD0010 / OHSAS18001 JOA-OH0068

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