CDR FOOD*LAB*

LACTIC ACID | milk, diary products, eggs, vegetable mashes

FOOD*LAB*

PURPOSE OF THE TEST

Lactic acid is the result of fermentation of lactose, which is principally caused by microbial activity. As its concentration depends on the total amount of bacteria, it can be used to determine whether a food product has been correctly preserved. Thermal treatments at high temperatures, for example on UHT milk, reduce the microbial presence, but do not alter the concentration of lactic acid, which can therefore provide useful information on the "history" of the product. The test can also be carried out on powder derivatives (serum, milk, additives) after reconstruction in water. The test can also be used for cheese, vegetable mashes and eggs, in which case the percentage of lactic acid must necessarily fall within a specific range. www.cdr-mediared.com/lactic-acid-milk-dairy-products

REAGENTS

R1 (pre-vialed in cuvette): Phenol derivative - Phosphate buffer.
R1a (dropping bottle): Catalyst.
R2 (lyophile): Lactate oxidase - Peroxidase.

METHODOLOGY

Test type: End Point.
Color reading at 545 nm or 505 nm.
Testing time: 8 minutes.
It is possible to carry out test sessions with several samples, up to a maximum of 14.
Calibration can be attained by aligning test and reference values.

TEST PRINCIPLE

In presence of lactate oxidase and peroxidase, lactic acid reacts with the phenol derivative forming a purple compound with an intensity that is directly proportional to the concentration of lactic acid, when measured at 505 nm or 545 nm. L-lactic acid in the sample. CDR's innovative method is simple, fast and minimizes the risk of contamination for operators because the test can be performed on very small samples.

SAMPLE

Sample as is: Milk, mixed eggs and mashes.
Diluted samples: Eggs in powder and yoghurt.
Homogenized samples in diluted soda solution: Cheese.

KIT

Pre-vialed disposable test tube.

KIT CODE	SAMPLE VOLUME	RANGE
*300204 (100 tests) *300076 (20 tests)	100 µL milk as is	2-200 ppM
*300376 (20 tests) *300375 (100 tests)	10-50 µL of homogenized cheese	0,01-1,75 g%
*300388 (20 tests) *300385 (100 tests)	10-20 µL of eggs	10 - 10.000 ppM
*300251 (20 tests) *300250 (100 tests)	10 µL of mashes	5 - 2100 ppM

The sample volume and linearity range vary according to the selected calibration curve.

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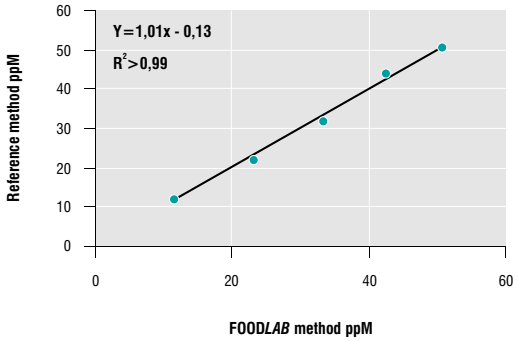
COMPARATIVE TESTS

Tests on whole milk samples were carried out by a leading milk producer in order to compare the reference method (**Boehringer Mannheim** enzymatic method) with **FOOD*LAB***'s method.

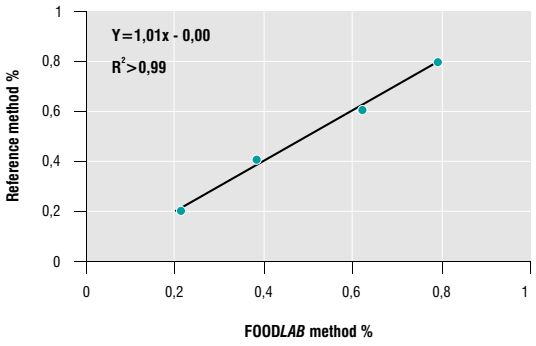
FOOD*LAB* method ppM	Reference method ppM
11,2	12,2
23,0	22,1
33,5	31,7
42,4	44,2
50,5	50,6



RECOVERY TESTS

Recovery tests were carried on homogenized mozzarella samples in soda integrated with a standard solution of L-lactic acid.

Sample	FOOD*LAB* method%	Reference method %
1	0,21	0,20
2	0,38	0,40
3	0,62	0,60
4	0,79	0,80



REPEATABILITY TESTS

Repeatability tests carried out on samples of milk, mozzarella and eggs.

Test	Whole milk ppM	Mozzarella %	Beaten eggs ppM
1	14,3	0,62	172
2	14,0	0,58	171
3	13,7	0,61	176
4	14,7	0,60	176
5	14,1	0,60	191
AVERAGE	14,2	0,60	177
DS	0,37	0,01	7,93
CV	2,6%	2,46%	4,5%

SUMMARIZED TABLE

SAMPLE	LINEARITY	ACCURACY	REPEATABILITY	CORRELATION COEFFICIENT	SENSITIVITY	TOTAL TESTING TIME	TEST/HOUR	UNIT OF MEASUREMENT
Milk	200 ppM	+/- 10%	CV <6%	R> 0,99	2 ppM	8 min	60	ppM
Cheese	1,75 %	+/- 10%	CV <6%	R> 0,99	0,01 %	8 min	60	%
Eggs	10000 ppM	+/- 10%	CV <6%	R> 0,99	10 ppM	8 min	60	ppM
Mashes	2100 ppM	+/- 10%	CV <6%	R> 0,99	5 ppM	8 min	60	ppM

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