

The analysis was conducted by the CASTALAB di Bussolati e Miti laboratory, located at Piazza Meschi 2/B, 43036 Fidenza – PR, Italy. The laboratory is registered in the Emilia-Romagna regional register under the number 008/PR/004.

Technical Director: Dr. Gino Miti
General Manager: Daniele Bussolati



Fidenza 25/05/2023
Spett.le
CNT LAB SRL
Via Cardano 32
43036 - Fidenza - PR

Codice cliente: CL
Protocollo CL 483/2023

Data consegna: 11/05/2023
Luogo Laboratorio: Ora: 17:00

Responsabile prelievo: Cliente
Oggetto: prova batterica e colturali analisi ultrarapida (prodotto da Vorlon)

Campioni consegnati (DOT) 1 del 11/05/2023

Articolo T.VETZOOVDLSLVRP001 – diluizione SALVALAT 18.75 per analisi - lotto 13123A

Articolo T.VETZOOVDLSLVRP002 – diluizione SALVALAT 11.75 per analisi - lotto 13123B

Breve descrizione della preparazione dei campioni ad esecuzione della prova

Per la produzione di formaggi a pasta dura si utilizza, per il processo di caratterizzazione, una coltura naturale di batteri lattici, detta siero inietto, questa coltura si utilizza, per il processo di caratterizzazione, in condizioni

mediosettimate controllate del siero in fresco lavato.

I microorganismi lattici selezionati sono l'effetto della tecnologia che viene applicata ad annesso della temperatura

di cottura (oscilla da 53 a 55°C a seconda delle zone di produzione); in questo modo vengono selezionati

culture batteriche con temperature ottimali di sviluppo da 40-44°C.

Nella prova il laboratorio che abbiamo condotto, dal siero sotto il fine lavorazione, ottenuto da un caseificio che

produce Parmigiano Reggiano, sono state preparate 3 aliquote uguali da 250 ml; ad una è stato aggiunto 1 ml

del prodotto in esame (articolo 001), alla seconda è stato aggiunto 1 ml del prodotto in esame (articolo 002),

alla terza acqua e stato aggiunto 1 ml di acqua ossigenata (prova in bianco).

I campioni così preparati sono stati incubati in termostato alla temperatura di 42°C (considerata ottimale per lo

sviluppo dei batteri lattici tipici del siero inietto naturale).

La prova è iniziata alle ore 10:00 del giorno 19/05/2023 ed interrotta alle ore 08:00 del giorno successivo

20/05/2023 (terminazione di formazione del siero inietto per a 22 ore).

Prima dell'iniezione sono stati determinati i valori di acidità (SH e pH); durante la giornata si è proceduto a

determinare, ogni due ore, il valore di pH per monitorare il grado di acidificazione; il giorno 20/05/2023 si è

proceduto all'iniezione delle aliquote per la conta dei batteri lattici vivi, analisi finalizzata il 25/05/2023.

Di seguito i risultati analitici



Codice cliente: CL
Protocollo CL 483/2023

Prova in bianco - Inoculo con 1 ml di acqua sterile

Prova svolta	Articolo 001	Articolo 002	Articolo 003	Articolo 004	Articolo 005
SH (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17

Prova con inoculo di: T.VETZOOVDLSLVRP001 - lotto 13123A

Prova svolta	Articolo 001	Articolo 002	Articolo 003	Articolo 004	Articolo 005
SH (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17

Prova con inoculo di: T.VETZOOVDLSLVRP002 - lotto 13123B

Prova svolta	Articolo 001	Articolo 002	Articolo 003	Articolo 004	Articolo 005
SH (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17
SH (pH) (pH)	5.27	5.14	5.17	5.17	5.17

Brevi commenti:
In tutte le bottiglie (colturali e di siero) l'ultimo valore della prova in bianco è 550.000 da cui sono stati sottratti 500.000.
L'incubazione, in ogni caso, ha raggiunto il valore finale di 322 (batterico) e 20 (pH) e il risultato è stato positivo (batterico).



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Fidenza, 25/05/2023

To:
CNT LAB SRL
Via Cardano, 32
43036 – Fidenza – PR
TEST REPORT
Client Code: CL
Protocollo: CL 483/2023
Delivery Date: 11/05/2023
Location: Laboratory
Time: 17:00

Analysis Start Date: 19/05/2023
Responsible for Sample Collection: Client
Subject: Technical testing and related analyses using the products you provided.
Samples delivered (Delivery Note DDT 1 of 11/05/2023):

- Item T.VETZOOVDLSLVRP001 – dilution SALVALAT 18.75 for analysis – Batch 13123°
- Item T.VETZOOVDLSLVRP002 – dilution SALVALAT 11.75 for analysis – Batch 13123B

The test was conducted in accordance with the received instructions.

Brief Description of Sample Preparation and Testing Procedure:

For the production of hard cheeses, the process of coagulation involves the use of a natural culture of lactic acid bacteria known as whey starter. This culture is naturally formed as a result of rapid bacterial multiplication under relatively controlled conditions from the whey left over after processing.

The selection of lactic acid microorganisms depends on the technology used and the heating temperature (ranging from 53°C to 55°C depending on the production region). As a result, thermophilic lactic acid bacteria are chosen, with an optimal growth temperature between 40°C and 45°C.

In the laboratory study we conducted, three equal portions of 250 ml each were prepared from heated whey obtained from a dairy producing Parmigiano Reggiano cheese:

- 1 ml of the tested product (item 001) was added to the first portion;
- 1 ml of the tested product (item 002) was added to the second portion;
- 1 ml of water was added to the third portion (control sample).

The prepared samples were incubated in a thermostat at 42°C, the optimal temperature for the development of thermophilic lactic acid bacteria characteristic of natural whey starter cultures.

The test began at 10:00 on May 19, 2023, and was completed at 08:00 on the following day, May 20, 2023, simulating whey starter formation over 22 hours.

Before incubation, SH acidity and pH were measured. During the day, pH measurements were taken every two hours to monitor acidity levels. On May 20, 2023, plate incubation began to count live lactic acid bacteria, and the analysis was completed on May 23, 2023.

Below are the analytical results.

Control Test (Blank Sample): Inoculation with 1 ml of sterile water

Tests Conducted and Analysis Results

Date of Analysis Completion:

Time	pH	Acidity (SH°/50 ml)	Live Lactic Acid Bacteria (CFU/ml)
10:00 (start of the test)	5.82	3.10	..
12:00 (after 2 hours)	5.22	..	..
14:00 (after 4 hours)	4.82	..	..
16:00 (через 6 часов)	4.45	..	..
18:00 (after 8 hours)	4.07	..	..
08:00 (after 22 hours)	3.19	32.5	..
08:00 (23/05/2023)	..	..	720 000 000

Test with Inoculation: T. T.VETZOOVDLSLVPRP001, Batch 13123A

Tests Conducted and Analysis Results

Date of Analysis Completion:

Time	pH	Acidity (SH°/50 ml)	Live Lactic Acid Bacteria (CFU/ml)
10:00 (start of the test)	5.82	3.10	..
12:00 (after 2 hours)	5.30	..	..
14:00 (after 4 hours)	4.90	..	..
16:00 (after 6 hours)	4.58	..	..
18:00 (after 8 hours)	4.18	..	..
08:00 (after 22 hours)	3.22	31.8	..
08:00 (23/05/2023)	..	..	680 000 000

Test with Inoculation: T. T.VETZOOVDLSLVPRP002, Batch 13123B

Tests Conducted and Analysis Results

Date of Analysis Completion:

Time	pH	Acidity (SH°/50 ml)	Live Lactic Acid Bacteria (CFU/ml)
10:00 (start of the test)	5.82	3.10	..
12:00 (after 2 hours)	5.33	..	..
14:00 (after 4 hours)	5.02	..	..
16:00 (after 6 hours)	4.88	..	..
18:00 (after 8 hours)	4.38	..	..
08:00 (after 22 hours)	3.27	29.5	..
08:00 (23/05/2023)	..	..	580 000 000

Brief Comment

The number of live lactic acid bacteria varies from 720 million (an excellent value) in the control sample to 580 million in the whey to which product __002 was added.

The acidity, expressed in SH degrees, reached a final value of 32.5 (control sample) and 29.5 (_002). The pH values indicate low buffering capacity in all samples.

Milk Coagulation Test

The result must exceed 500,000 CFU of lactobacilli, indicating an excellent outcome.

The analyses demonstrate that both products (001 and 002) surpass the minimum threshold of 500,000 CFU/ml:

- Product 001: 680 million CFU/ml
- Product 002: 580 million CFU/ml

Both products meet the requirements and are suitable for use in the production of hard cheeses.

Explanation of the Milk Coagulation Test Results

Purpose of the Test

To verify the ability of products T.VETZOOVDLSLVPRP001 and T.VETZOOVDLSLVPRP002 to stimulate the growth of lactobacilli

necessary for producing hard cheeses such as Parmigiano Reggiano. To pass the test, the level of live lactobacilli must exceed 500,000 CFU/ml.

Conclusion

The products meet the requirements. They stimulate the growth of lactobacilli at levels sufficient for use in cheese production.

Product 001 shows the best results among the tested products and can be recommended for further application.

Client Code: CL

Protocol: CL 483/2023

For additional clarifications, please contact us.

Technical Director: Dr. Gino Miti

General Manager: Daniele Bussolati

Note

Sample collection, if performed by the laboratory, is carried out in accordance with internal procedures (IO01-IO01.2-IO01.4, latest editions). Sampling is not subject to accreditation, except in cases involving swabs and air analysis in work environments, performed in accordance with the methodologies ISO 18593 and UNI EN 13098 in their latest editions.

The results of this report are valid only for the analyzed samples and may not be partially reproduced without the laboratory's written permission. If the sample collection was performed by the client, the analytical result pertains to the sample in the state in which it was received.

Testing-related uncertainties are available at the laboratory along with the analysis methodology; if necessary, they are expressed with a coverage factor $K=2$ and a confidence level of 95%.

The results of microbiological tests are presented in accordance with the ISO 7218 standard, latest edition.

The laboratory disclaims all responsibility for information provided by the client.

DOCUMENT DIGITALLY SIGNED IN ACCORDANCE WITH CURRENT LEGISLATION WHEN RECEIVED VIA EMAIL.

Code SR01RDP – MQ Reference – Edition 12 – Date: 31/05/2022