Catalogue of National Collection of Dairy Cultures

National Collection of Dairy Cultures

Dairy Microbiology Division

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Karnal-132001(Haryana) India

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Director and Vice-Chancellor

FOREWORD

The National Collection of Dairy Cultures (NCDC) functions as a specialized repository, catering to diverse sectors like the dairy and food industry, academic institutions, and research organizations within the country. NCDC's fundamental services encompass the deposition, preservation, and distribution of these dairy cultures to various stakeholders. Primarily, NCDC has effectively addressed the increasing demand for dairy cultures, which are crucial for producing fermented milk products in the Indian Dairy Industry. Additionally, NCDC aids the Dairy Industry by facilitating access to and validation of dairy cultures for the commercial production of native fermented milk products. An added facet of its contribution is the promotion of Direct-Vat-Set (DVS) starter manufacturing within India. The centre is proactive in conducting specialized training programs that centre on the preservation, propagation, and effective use of dairy starter cultures in developing fermented milk and milk-based products. NCDC's engagement extends even further, encompassing collaborative research projects aligned with its expertise. The publication of its catalogue is poised to comprehensively detail the wide array of cultures currently housed within NCDC. NCDC is registered with World Data Centre for Microorganisms (Reg. No. WDCM 775), a world directory of culture collection, Japan. At present, NCDC has an impressive collection of Lactic acid Bacteria over 800 microbial cultures including some Fungal cultures also, spanning cultures for specific product preparations, such as Cheese, Dahi, Lassi, Misti Dahi, and Yoghurt. Furthermore, NCDC offers essential facilities for the secure deposition and meticulous categorization of cultures. This includes the efficient streamlining of technology transfer processes, ensuring that cultures become readily accessible for general sale. These cultures have spurred innovative technologies, including low-fat dahi, low-fat lassi, low-fat shrikhand, misti dahi, sour dahi, vitamin B12 fortified soy yoghurt, and indigenous probiotic strains for cholesterol and diabetes management. In essence, NCDC stands as a cornerstone in the advancement of the dairy culture landscape, serving a multitude of sectors through its diverse range of services and valuable contributions. I am sure that this NCDC catalogue will further enhance the visibility of indigenous dairy cultures among the various stakeholders.

Dr. Dheer Singh

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About NCDC

INTRODUCTION

National Collection of Dairy Cultures (NCDC) is located in the Division of Dairy Microbiology at the ICAR-National Dairy Research Institute, Karnal since 1962. The cultures were earlier maintained on solid media by periodic sub-culturing. Freeze-drying was introduced in 1964 and adopted for the long-term preservation of cultures. The NCDC stock includes strains of general interest to education and research and strains of industrial importance. The main interest of the collection lies in the lactic acid bacteria from dairy sources. The NCDC has been significantly contributing as a National Reposiratory in manufacture of fermented milk products in India by making available dairy cultures to Indian Dairy Industry. At the same time, it also caters to the need of research institutes and in recent years, there has been a spurt in publications of research papers in national and international research journals based on experiments done on NCDC cultures. At present it has strains of bacteria, fungi and yeasts in its collection. In addition to individual strain cultures, the NCDC also holds mixed strain (traditional) and defined strain-formulated cultures for making different varieties of cheese and fermented milks. Besides maintenance and distribution of cultures, NCDC acts as a safe depository of microbial cultures of improtance. The NCDC also organizes specialized training programmes and workshops to provide know-how on maintenance & preservation of cultures, propagation of dairy starter cultures and other related aspects.

MEMBER OF THE WDCM AND WFCC

The NCDC is registered with the World Data Centre for Microorganisms (WDCM) as registration number WDCM 775 accessible online via the WDCM homepage (http://wdcm.nig.ac.jp/) through the CCINFO database and is on its way to becoming an Affiliate Member of the World Federation for Culture Collections (WFCC).

DEPOSIT OF CULTURES

In order to enrich the collection and make its services more useful the NCDC welcomes the deposit of cultures that have been isolated, identified, and characterized from ICAR-NDRI, Karnal, as well as from other regions across the country, categorizing them into four types: (a) General deposit, (b) Other Repository deposits, (c) Safe deposit, and (d) Innovative culture deposits. Pathogens are not accepted for deposit in the NCDC stock. General and Other Repository deposit is a free of cost service for depositor. Information has to be given in the prescribed format (Microorganism deposition form) by the depositor along with the cultures. A distinguishing accession number is allotted to each new culture deposited in the NCDC stock.

SUPPLY OF CULTURES

The supply of cultures by the NCDC has been recognized as Consultancy Service at NDRI, Karnal.The information about NCDC and its cultures are available online at https://ndri.res.in/services/. NCDC cultures are supplied in freeze dried form in sealed glass ampoules to stakeholders (such as academic & research institutes, governemnt organizations, entrepreneurs, private sectors, Dairy industries etc.) on the understanding that the recipient will observe the following:

1. The recipient shall ensure that the cultures are opened and used by, or under the supervision of persons trained and competent in microbiological techniques and in laboratories meeting the containment requirements.
2. The recipient shall ensure that any person opening or using the cultures shall do so only with his authorization.
3. There responsibility for ensuring safe handling, storage, use, misuse or other wrong doing with respect to cultures or derivatives thereof, supplied by NCDC rests with the recipient. NCDC takes no responsibility for any untoward events arising from handling the cultures after their dispatch to there recipient.

CONDITIONS OF SUPPLY

1. The purchaser of NCDC products shall assume all responsibility in connection with the handling, transportation, storage, use and misuse or other wrong doing of such products.
2. It is the responsibility of the recipient of NCDC products to determine whether their use of the material supplied infringes any intellectual property rights and to obtain any necessary licenses or permissions there under.
3. NCDC bears no responsibility for organisms having NCDC acronym produced subsequently and sold by independent commercial companies.

COMPLAINTS

The NCDC will consider all complaints received within 15 days of dispatch for freeze-dried cultures. In case of complaint, the client should keep all documents accompanying the delivery and ensure that the organism has been properly stored up on receipt. Complainant must provide details of growth medium, incubation conditions and other relevant tests performed at his end.

PROCESSING OF CULTURES

The NCDC cultures are prepared using the freeze-drying method and enclosed in glass ampoules that are vacuum-sealed. These cultures are preserved under refrigerated conditions and stored at a low temperature of -20°C for long-term conservation. To ensure traceability, each ampoule is permanently marked with labeled paper strips inserted before sterilization. The accession number of each culture is either printed on the strip or indicated directly on the ampoules.

REVIVING OF FREEZE DRIED CULTURES

Make a fine cut on the ampoule at the midpoint of the cotton wool plug and crack the glass by applying red-hot wire or glass rod to the fine cut. Allow the air to enter slowly before gently removing the pointed part. Discard the upper part of ampoule and the cotton plug into disinfectant solution.

Flame the open end of the ampoule and aseptically add to the freeze-dried material 0.3-0.4 ml of sterilized skim milk or appropriate broth with Pasteur pipette; mix well and transfer the total mixture to a test tube containing 8-10 ml of skim milk or broth of the same medium. Subculture should be incubated at the appropriate temperature under appropriate conditions.

Given proper treatment and conditions, most freeze-dried cultures will grow out in 1-2 days. However, some freeze-dried cultures may exhibit along lag period and should be given 3-4 days incubation time before discarding it as unviable. Ampoules not opened soon after receipt should be stored in a cool, dark place. They should not be exposed to sunlight and care should be taken when opening ampoule as the contents are in a vacuum. The revived subculture should be subcultured at least twice before they can be optimally used in experiments.

ORDERING NCDC CULTURES

Orders for the NCDC strains can be placed with **Incharge, National Collection of Dairy Cultures, Dairy Microbiology Division, ICAR-National Dairy Research Institute, Karnal-132001, India.**

Phone: 0184 2259198.
Email: ncdc.ndri@icar.gov.in.
Fax: 0184 2250042

Orders must be accompanied with a demand draft for the appropriate amount in favour of **"ICAR Unit, NDRI, Karnal payable at Karnal"**. The service charges for the cultures are revised from time to time and can be obtained from Incharge, NCDC. Cultures are mailed by registered post at the customer's address.

COST OF NCDC CULTURE

The cultures categorized under "General Deposits" are accessible for supply to stakeholders upon payment, following the submission of all necessary documents. Cultures intended for safe deposit by the depositor incur applicable charges.

(A) Cost of NCDC Cultures for Academic Organizations/Other Institutes (Govt. Agency)/Private Sector/Industeries:
Rs. 2500+GST @ 12%

(B) Cost of NCDC Cultures for ICAR-NDRI Scientist/Students/Staff:
Rs. 500+ GST @ 12%

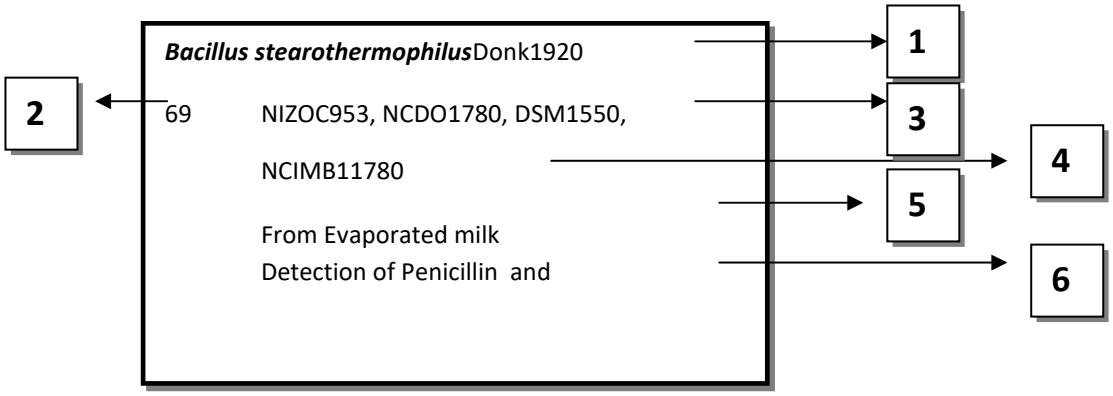
(C) Cost of Innovative Cultures (Technology-Associated), Limited to Buyers as per MOU Clause:
Rs. 7000+GST @ 18%.

(D) Deposition Charges of Cultures to NCDC under Safe Deposit:
Rs. 2000+GST@ 12% (For a period of five years)

LISTING OF CULTURES IN THE CATALOGUE

Cultures have been listed under four different sections namely, bacteria, fungi, yeasts and mixed starters. In each section the cultures are listed in alphabetical order according to the genus and species. Strains within the species are listed in numerical order. Individual strains are arranged in particular format as shown under Guide to Entries. Applications, Composition of Growth media, Miscellaneous Information and Numeric Index of NCDC numbers are given in separate sections.

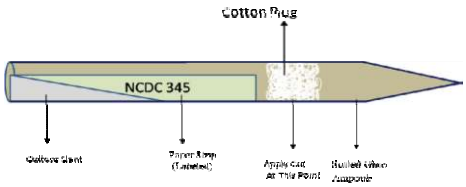
Guide to Entries



1 **Scientific Name**

2 **NCDC Accession Number**

3 **Other Collection Numbers if any**



Details of a Freeze-dried Ampoule

4 **Source of Isolation**

5 **Depositers name (First & Responsible person)**

6 **Special features & attributes**

7 **Growth Conditions**

8 **References if any**

NCDC Cultures: Deposit Categories

NCDC serves as a central repository for lactic and non-lactic microbial cultures, facilitating their deposit, authentication, and distribution. Some of these cultures are also referred as starter cultures used with an intention of initiating the process of dairy fermentation. Researchers and organizations can submit cultures to NCDC, which verifies their authenticity and maintains them securely. These cultures are then made available to stakeholders across various sectors for research, education, and industrial applications. NCDC operates under different deposit categories, ensuring transparency, confidentiality, and adherence to legal and ethical standards. Through streamlined processes and collaboration with depositors, NCDC facilitates access to valuable microbial resources, fostering innovation and scientific advancement.

a) General Deposit:

NCDC accepts microbial cultures of importance for distribution to various sectors after authentication. These strains are valuable for research, industry, and academic purposes. Depositors grant NCDC ownership interests and submit necessary documents for culture deposition (Refer to Annexure-1 for deposition process).

b) Other Repository Deposit:

NCDC facilitates depositing microbial cultures sourced from external repositories for research and educational use. Depositors must provide detailed information and obtain consent/NOC from original repositories. Formal documentation is required for submission (Refer to Annexure-1 for deposition process).

c) Safe Deposit:

NCDC offers secure preservation of microbial cultures for five years, ensuring confidentiality. Depositors retain ownership and can renew the deposit. Access is restricted to authorized individuals for specific purposes. A formal agreement and deposit form are necessary (Refer to Annexure-1 for deposition process).

d) Innovative Cultures Deposit:

NCDC manages the distribution of proprietary microbial cultures linked to specific technologies. Access is limited to technology purchasers under an MOU. A commercial distribution agreement is required, and subsequent purchases incur fees. Depositors must submit a deposit form (Refer to Annexure-1 for deposition process).

General Deposit

Introduction

Lactic acid bacteria, recognized for their diverse metabolic activities and roles in food fermentation, health promotion, and environmental remediation, hold immense interest for scientific communities globally. Acknowledging the necessity of authenticated strains for scientific progress and practical applications, NCDC serves a crucial role in facilitating the distribution of these valuable microbial resources. Within the General Deposit category, NCDC accepts microbial strains from researchers seeking NCDC numbers to disseminate authentic cultures across various sectors such as teaching, research, industry, and beyond. These cultures, characterized and authenticated, serve as invaluable tools for exploring microbial physiology, genetics, ecology, and their multifaceted applications. Their availability for normal sale under this category enables interested stakeholders to acquire strains for diverse applications.

Depositors, along with their Institution's Duly Authorized Signatory, grant NCDC ownership interests in the transferred material, empowering NCDC to manage and distribute cultures while safeguarding the interests of all stakeholders. While NCDC aims to maintain deposited cultures, there is no guarantee of continuous maintenance for specific strains. Nevertheless, NCDC adheres to best practices in culture preservation and distribution to ensure the integrity and viability of deposited strains over time. Depositors initiate the process by submitting a deposit form detailing essential information about the cultures and their intended use. Upon receipt, NCDC conducts rigorous verification procedures to assess viability and purity, issuing an NCDC accession number/deposit certificate upon successful verification. The requirement for culture deposition in NCDC is given in the Annexure-1.

Catalogue of Cultures- General Deposit

Acetobacter aceti

(Pasteur 1864) Beijerinck 1898

137 Deposited by Dr. M.P. Tiwari, NDRI, Mannitol Agar, 25°C

Acinetobacter johnsonnii
Bouvet and Grimont 1986

72 NDRI strain, Nutrient Agar, 37°C

Bacillus lentus
Gibson1935

180 NDRI, MK5-6, alkaline soil from Karnal, Isolated by C. Ganesh Kumar, Produces alkaline protease (s) Alkaline, GPYC medium, pH-10.0, 37°C

Bacillus licheniformis
(Weigmann1898) Chester1901

266 buffalo rumen, Isolated by Priyabrata Pattnaik, NDRI, Karnal, Slow growing produces inhibitory Substances against *S. bovis* when grown anaerobically highly pleomorphic, Mineral glucose medium (ATCC) for Aerobic growth L-10 for Anaerobic growth, 35-39°C

598 MRS, 37°C, pH-6.0, 16-18h

Bacillus megaterium
de Bary1884

67 NDRI Strain, Nutrient Agar, 30°C

Bacillus subtilis
Ehrenberg1835, Cohn1872

70 NDRI Strain, Nutrient Agar, 37°C

Geobacillus stearothermophilus

328 NDRI Strain, Aerobic 55°C, Nutrient agar/broth, 48h

Bifidobacterium adolescentis
Reuter1963

236 HI 26, Isolated by Chand Ram from Infant faeces, MRS/MILS, anaerobic, 37°C

Bifidobacterium animalis

689 TK Tent 1, NDRI, Karnal, Deposited by Nancy Awasthi, Dr. S. K. Tomar, 37°C, 24-48 h

Bifidobacteria sp.

657 B. Breve 2, NDRI, Karnal, Deposited by Nancy Awasthi, Dr. S. K. Tomar, 37°C, 24-48 h

658 B. Breve 1 a, NDRI, Karnal, Deposited by Nancy Awasthi, Dr. S. K. Tomar, 37°C, 24-48 h

661 Ten Ib, NDRI, Karnal, Deposited by Nancy Awasthi, Dr. S. K. Tomar, 37°C, 24-48 h

665 Nan 1, NDRI, Karnal, Deposited by Nancy Awasthi, Dr. S. K. Tomar, 37°C, 24-48 h

679 Nib 2, NDRI, Karnal, Deposited by Nancy Awasthi, Dr. S. K. Tomar ,37°C, 24-48 h

Bifidobacterium bifidum
(Tissier1900)Orla-Jensen1924

231 HI 39, NDRI Karnal, Isolated by Chand Ram, Shows good hydrophobicity, weak positive reaction for fructose-6-phosphate phosphoketolase, MRS+cysteine, YDM, anaerobic, 37°C

232 HI48, Isolated by Chand Ram from Infant stool (One month age),

adhesion to Hexadecane, MRS/MILS, anaerobic, 37°C

233 BA3, NDRI, Karnal, Isolated by Chand Ram, MRS, anaerobic, 37°C

234 BD4, NDRI, Karnal, Isolated by Chand Ram, MRS, anaerobic, 37°C

235 BD1, NDRI, Karnal, Isolated by Chand Ram, MRS, anaerobic, 37°C

703 MRS bifido media, 37°C, 48h

Desulfotomaculum ruminis

65 Source of isolation is rumen, Deposited by vipul kashyap, Dr. Chand Ram, Postgatemedium ,Anaerobic diluent, 39°C, pH 6.8, 24 h

Enterobacter aerogenes
Hormaecheand Edwards1960

106 NDRI strain, Nutrient Agar, 37°C

173 NDRI Strain 270, Nutrient Agar, 30 °C

Enterococcus faecalis
(Andrewes and Horder 1906)
Schleifer and Kilpper-Balz1984

89 NCBI Acc. No. PP935433, NDRI S-59, (*Streptocccus lactis*), YDB/Litmus milk, 30°C

93 NCBI Acc. No. PP935391, NDRI S-57, (*Streptococcus lactis*)

114 NDRI Strain S30, Litmus milk, 37°C

115 NDRI Strain 253, Litmus milk, 37°C

117 NDRI Strain III-S1, Litmus milk, 37°C

119 NDRI Strain 213, Litmus milk, 37°C

120 NDRI Strain 190, Litmus milk, 37°C

121 NDRI Strain RTS (*Streptococcus zymogenes*), Litmus milk, 37°C

122 NDRI Strain S108 (*streptococcus liquifaciens*), Litmus milk, 37°C

128 NCBI Acc. No. PP935441, B, isolated by Dr. M.P. Tiwari, NDRI, Litmus milk, 30°C, high diacetyl producing, Indian Journal Dairy Science

Enterococcus faecium

638 NCBI Accession No. PP935432, D-14, Dahi Culture NCDC 161, deposited by Archana M & Diwas Pradhan MRS broth/agar, 30°C, pH 6.5, 12-24 h

641 B-4, deposited by Diwas Pradhan & Archana M., isolated from NCDC162, M-17, 30°C, 16-20h

Enterococcus lactis

597 MRS, 37°C, pH-6.0, 16-18h

Escherichia coli

(Migula1895) Castellani and Chalmers1919

209 Strain AF-2, deposited by V. K. Batish, Cloned strain with recombinant pUC 18, Luria broth+Amp^{50}+Kan^{40}, 37°C

247 NDRI Isolate, Nutrient Agar, 37°C

361 Recombinant host for PL143, Deposited by M. Sudhamani, LB Medium, 37°C, 12-14h

Klebsiella pneumoniae

(Schroeter 1886) Trevisan 1887

138 Bhavan's Collge Bombay, Nutrient Agar, 37°C

Lactobacillus sp.

333 CDK 979, NDRI, Isolated by Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 37°C, pH6.5, 24h

Lactobacillus acidophilus
(Moro1900)Hansen and Mocquot1970

13 NDRI III, MRS/Litmus milk, 37°C

291 LA5, Deposited by Neeraj Kumar, Produces bacteriocin (heat stable, active over wide pH range) MRS, 37°C

343 Derivative of NCDC14 by adaptation and protoplast fusion, Deposited by P. P. Tripathi, MRS, pH 4.5 using 50mM Lactic Acid, Microaerophilic, 42°C

600 22A, MRS agar/ broth, 37°C, pH-6.1, 12-24h

702 MRS broth/agar, 37ºC, 24-48h

Ligilactobacillus agilis

614 Helix-11-1395, MRS agar, Yeast glucose broth and 0.75% agar sol, 37 ºC, 24-48 h

Dellaglioa algida

680 KSBT-44, Deposited by Dr. Prangya & Debapriya, MRS broth/agar, 37ºC, pH-6.5, 24-36 h

Lactiplantibacillus argentoratensis

356 RZ-18, Isolated from camel milk, Kalayat, MRS, 37ºC

Levilactobacillus brevis
(Orla-Jensen1919) Bergey's *etal*.1934

1 NDRI strain RTS, Litmus milk, 30°C

28 Gene Bank Accession No. JX104093, CCB-2, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

36 Gene Bank Accession No. JX104092, CCB-1, Isolated from Churpi Cheese, Gangtok,Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48

371 NSLAB, NCBI AccNo.EU637371, Churpi cheese isolate, deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

403 NSLAB, NCBI Acc No. EU886737, Churpi cheese isolate, deposited by Prashant, AMMAS Project MRS/YGLPB, 37°C

Lacticaseibacillus casei ssp. Casei
(Orla-Jensen1919)Hansen and Lessel1971

17 NDRI strain RTS, MRS/Litmus milk, 37°C

26 Gene Bank Accession No. JX104087, Alp-2-9, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

27 Gene Bank Accession No. HM163455, Alp-2-8 , Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

41 Gene Bank Accession No. JX104089, Alp-2-12, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj

Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

63 Gene Bank Accession No. HM163453, Alp-2-6, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

78 Gene Bank Accession No. HM163456, Alp-2-11 Isolated from Alpine Cheese, Gangtok,, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

80 Gene Bank Accession No. HM163452, Alp-2-5 Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, , MRS Broth, 37°C, pH 6-7, 24-48h

121 Gene Bank Accession No. HM163449, Alp-2-2, Isolated from Alpine Cheese, Gangtok,Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

126 Gene Bank Accession No. HM163448, Alp-2-1, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

131 Gene Bank Accession No. JX104086, Alp-1-13, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

132 Gene Bank Accession No. JX104085, Alp-1-11, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

136 Gene Bank Accession No. JX104084, Alp-1-10, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

142 Gene Bank Accession No. HM163446, Alp-1-8, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

170 Gene Bank Accession No. HM163444, Alp-1-6, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

171 Gene Bank Accession No. JX104083, Alp-1-5, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

179 Gene Bank Accession No. HM163441, Alp-1-2, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

181 Gene Bank Accession No. HM163440, Alp-1-1, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

272 Gene Bank Accession No. HM579935, A-2-6, Camel Cheese isolate, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

297 C-I, NDRI Karnal, Deposited by Vijendra Mishra, MRS/Litmus milk, 37°C

298 Y strain, NDRI Karnal, Deposited by Vijendra Mishra, Litmus milk, 37°C

299 VT, Deposited by Vijendra Mishra, MRS/Litmus milk, 37°C, 337-240.

357 plasmid(S), Isolated from Karnal, Deposited by M. Sudhamani, MRS, 37°C, 12-18 h

358 plasmid(S), Isolated from Karnal, Deposited by M. Sudhamani, MRS, 37°C, 12-16 h

359 plasmid PSMA 23, Isolated from Karnal, Deposited by M. Sudhamani, MRS, 37°C, 12-18 h

684 MRS, 37°C, 24-48 h, pH6.5

726 Gene Bank Accession No. HM163468, CCC-11, Churpi Cheese, Gangtok, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

727 Gene Bank Accession No. HM163467, CCC-10, Churpi Cheese, Gangtok, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

728 Gene Bank Accession No. JX104097, CCC-9, Churpi Cheese, Gangtok, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

732 Gene Bank Accession No. HM163465, CCC-7, Churpi Cheese, Gangtok, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

733 Gene Bank Accession No. JX104096, CCC-6, Churpi Cheese, Gangtok, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

734 Gene Bank Accession No. HM163464, CCC-5, Churpi Cheese, Gangtok, Isolated by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

735 Gene Bank Accession No. HM163463, CCC-4, Churpi Cheese, Gangtok, Isolated by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

736 Gene Bank Accession No. HM163462, CCC-3, Churpi Cheese, Gangtok, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

737 Gene Bank Accession No. JX104095, CCC-2, Churpi Cheese, Gangtok, Isolated by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

738 Gene Bank Accession No. HM163461, CCC-1, Chupi Cheese, Gangtok, Isolated by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

Lactobacillus corniformis

Abo-Elnaga and Kandler1965

366 NSLAB NCBI Acc No. EU637372, Churpi Cheese isolate, deposited by Prashant, AMMAS Project, MRS / YGLPB, 37°C

367 NSLAB NCBI Acc No. EU637373, Churpi Cheese isolate, deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

368 NSLAB NCBI Acc No. EU637374, Churpi Cheese isolate, deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

369 NSLAB NCBI Acc No. EU637375, Churpi Cheese isolate, deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

Lactobacillus delbrueckii (Leichmann1896) Beijerinck1901

40 Gene Bank Accession No. JX104091, CCA-2, Isolated from Churpi Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48h

194 Gene Bank Accession No. GQ183922, B-2-14, Camel Cheese isolate,Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

213 Gene Bank Accession No. GQ183920, B-2-12, Camel Cheese isolate, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

217 Gene Bank Accession No. GQ183919, B-2-11, Camel Cheese isolate, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

218 Gene Bank Accession No. GQ183917, B-2-10, Camel Cheese isolate, Deposited by Dhiraj Nanda, AMMAS Project, , 37°C, MRS Broth, pH 6-7, 24-48h,

228 Gene Bank Accession No. GQ183910, B-2-6, Camel Cheese isolate , Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

229 Gene Bank Accession No. GQ183909, B-2-5, Camel Cheese isolate, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

230 Gene Bank Accession No. GQ183908, B-2-4, Camel Cheese isolate, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

234 Gene Bank Accession No. GQ183905, B-2-3, Camel Cheese isolate, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

235 Gene Bank Accession No. GQ183903, B-2-2, Camel Cheese isolate, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

247 Gene Bank Accession No. GQ183901, B-2-1, Camel Cheese isolate, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

271 Gene Bank Accession No. GQ183929, A-2-7, Camel Cheese isolate, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

295 Gene Bank Accession No. GQ183928, A-2-5, Camel Cheese isolate, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

307 Gene Bank Accession No. GQ183926, A-2-3, Camel Cheese isolate, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

317 Gene Bank Accession No. GQ183925, A-2-2, Camel Cheese isolate, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

405 NSLAB NCBI Acc No. EU886724 , Churpi cheese isolate, deposited in AMMAS Project MRS/YGLPB, 37°C

743 Gene Bank Accession No. JX104096, CCB-3, Churpi Cheese, Gangtok, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

Lactobacillus delbrueckii ssp. bulgaricus

(Orla-Jensen1919) Weiss *et al.*1984)

4 NDRI Litmus milk, 37°C

8 NDRI Strain RTS, 1951, NCIM 2359, MRS/ Litmus milk, 37°C

184 Deposited by K.M. Sahani, Univ. Nebraska, USA (*L. bulgaricus*), Litmus milk, 30°C

281 B21, NCDO 2487,Yog 7, NCDC307, Galactose negative, Skim milk, 37°C

317 Isolated from dahi sample, Deposited by Dr. Rameshwar Singh, YGLP / Skim milk, 37°C

318 Isolated from dahi sample, Deposited by Dr. Rameshwar Singh, YGLP / Skim milk, 37°C

342 Derivative of NCDC307, derived by parent strain adaptation and protoplast fusion, plasmid free (Produce heat shock protein), MRS pH 4.3 adjusted using 50 mM lactic acid, 42°C

628 A-5, Deposited by Yogita Sharma, MRS broth, 37°C, pH7, 12-14h

629 C-3, Deposited by Yogita Sharma, MRS broth, 37°C, pH7, 12-14h

630 A-1, Deposited by Yogita Sharma, MRS broth, 37°C, pH7, 12-14h

631 B-3, Deposited by Yogita Sharma, MRS broth, 37°C, pH7, 12-14h

632 B-4, Deposited by Yogita Sharma, MRS broth, 37°C, pH7, 12-14h

710 HH9, Deposited by Dr. Pradip Behare, MRS Broth, 42°C, pH 6.8, 12-16h

794 Genbank accession no. OR844040, Silage, Dr. Nitin tyagi, Dr. Komal Chauhan, MRS Broth, 37°C, pH 5.5-6.0, 24h

Lactobacillus delbrueckii ssp. lactis

Orla-Jensen1919, Weiss *et al.*1984

290 Sensitive to bacteriocin produced by NCDC 291, MRS, 37°C

Lactobacillus equi

615 Helix-10-1446, MRS, yeast glucose broth, 0.75% agar sol, 37ºC, 24-48h

Limosilactobacillus fermentum

Beijerinck 1901

210 Gene Bank Accession No. GQ183921, B-2-13, Camel Cheese isolate, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

220 Gene Bank Accession No. GQ183916, B-2-9, Camel Cheese isolate, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

222 Gene Bank Accession No. HM579933, B-2-08, Camel Cheese isolate, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

248 Gene Bank Accession No. GQ183918, B-1-7, Camel Cheese isolate, deposited by Dhiraj Nanda,

AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

250 Gene Bank Accession No. GQ183915, B-2-3, Camel Cheese isolate, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

251 Gene Bank Accession No. GQ183914, B-1-5, Camel Cheese isolate, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

254 Gene Bank Accession No. GQ183913, B-1-4, Camel Cheese isolate, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

255 Gene Bank Accession No. GQ183912, B-1-3, Camel Cheese isolate, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

264 Gene Bank Accession No. GQ183906, B-1-2, Camel Cheese isolate, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

265 Gene Bank Accession No. GQ183904, B-1-1, Camel Cheese isolate, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

301 Gene Bank Accession No. HM579934, A-2-4, Camel Cheese isolate, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

320 Gene Bank Accession No. GQ183907, A-1-2, Camel Cheese isolate, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

321 Gene Bank Accession No. GQ183902, A-1-1, Camel Cheese isolate, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

406 NSLAB NCBI Acc No.EU886727, Churpi cheese isolates, Isolated & deposited in AMMAS Project, MRS/YGLPB, 37°C

407 NSLAB NCBI Acc No.EU886728, Churpi cheese isolates, Isolated & deposited in AMMAS Project MRS/YGLPB, 37°C

408 NSLAB NCBI Acc No.EU886729, Churpi cheese isolates, Isolated & deposited in AMMAS Project, MRS/YGLPB, 37°C

410 NSLAB NCBI Acc No.EU886732, Churpi cheese isolates, Isolated & deposited in AMMAS Project, MRS/YGLPB, 37°C

411 NSLAB NCBI Acc No.EU886730, Churpi cheese isolates, Isolated & deposited in AMMAS Project, MRS/YGLPB, 37°C

412 NSLAB NCBI Acc No. EU886726, Churpi cheese isolates, Isolated & deposited in AMMAS Project, MRS/YGLPB, 37°C

604 RS-6, Raabadi, Deposited by Sandip Basu, MRS Broth, 37°C, pH 6.5,16-18h

606 JL-5, Raabadi, Deposited by Sandip Basu, MRS Broth, 37°C, pH-6.5, 16-18h

607 RD-3, Raabadi, Deposited by Sandip Basu, MRS Broth, 37°C, pH-6.5, 16-18h

608 JL-6, Raabadi, Deposited by Sandip Basu, MRS Broth, 37°C, pH-6.5, 16-18h

652 NDRI, MRS Broth, 37°C, pH 6.8-7.0,18 h

682 DT-17, Deposited by Dr. Pragya tripathy, MRS Broth, 37°C, pH-6.5, 48h

700 MRS Broth/agar, 37°C, pH-6.5, 1-2 days

701 GCL, Deposited by Priti Devi, MRS Broth/agar, 37°C, pH-6.5, 1-2 days

713 NCBI No. 1661233, ULAG, Deposited by Dr. S. Varalakshmi & Dr. B.V. Balasubramaniam M-17, Skim milk, 30-37°C, pH 4-7, 18-24h

716 Gene Bank Accession No. KC713960, Lb-RM-11, Chilika Buffalo Milk, Odisha, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

717 Gene Bank Accession No. KC713959, Lb-RM-9, Chilika Buffalo Milk, Odisha, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

718 Gene Bank Accession No. KC713958, Lb-RM-8, Chilika Buffalo Milk, Odisha, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h

719 Gene Bank Accession No. KC713957, Lb-C-17, Chilika Curd, Odisha, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

720 Gene Bank Accession No. KC713956, Lb-C-14, Chilika Curd, Odisha, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

721 Gene Bank Accession No. KC713955, Lb-C-9 (10), Chilika Curd, Odisha, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

722 Gene Bank Accession No. KC713954, Lb-C-8, Chilika Curd, Odisha, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

723 Gene Bank Accession No. KC713953, Lb-C-6, Chilika Curd, Odisha, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

724 Gene Bank Accession No. KC713952, Lb-C-5, Chilika Curd, Odisha, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

725 Gene Bank Accession No. KC713951, Lb-C-4, Chilika Curd, Odisha, Deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

744 MRS Broth/agar, 37°C, pH-6.5, 1-2 days

797 Gene bank accession no. OR844043, Silage, Dr. Nitin tyagi, Dr. Komal Chauhan, MRS Broth, 37°C, pH 5.5-6.0, 24h

Lactobacillus gasseri

688 DDH1, Deposited by Dinesh Dahiya, MRS broth, 37C, pH 6.5 (at 25ºC), 24-48 h

Lactobacillus helveticus

(Orla-Jensen1919) Bergey's *et al*.1934

35 NCBI Acc. No. OR777082, Cow milk, deposited by Dr. Sachin Kumar, MRS, 37°C pH 5.8-5.9, 24-48 h

292 Used as adjunct culture for preparation of cultured Mozzarella cheese with low Browning property, MRS, 37°C

370 NSLAB, NCBI Acc No. EU637376, Churpi cheese isolate, deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

Lactobacillus johnsonii

773 CPM23, Canine faeces, MRS Broth, 37°C,12-18 h, Probiotic Products

Lactobacillus niridescence

613 Helix-13-1448, MRS, yeast glucose broth, (0.75% agarsol), 37°C, 24-48 h

Lactiplantibacillus pentosus

790 Genbank Accession no. OR844036, Source of isolation Silage, deposited by Dr. Nitin tyagi, Dr. Komal Chauhan, Haryana, MRS Broth, 37°C, pH 5.5-6.0, 24 h

Lacticaseibacillus paracasei ssp. paracasei

Collins *et al*. 1989

22 NDRI 401(Lactobacillus plantarum) MRS/Litmus milk, 37°C

92 Gene Bank Accession No. HM163451, Alp-2-4, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48 h

118 Gene Bank Accession No. HM163450, Alp-2-3, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48 h

140 Gene Bank Accession No. HM163447, Alp-1-9, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48 h

154 Gene Bank Accession No. HM163445, Alp-1-7, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48 h

176 Gene Bank Accession No. HM163443, Alp-1-4, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48 h

178 Gene Bank Accession No. HM16442, Alp-1-3, Isolated from Alpine Cheese, Gangtok, Deposited by Dhiraj Nanda, MRS Broth, 37°C, pH 6-7, 24-48 h

335 NCBI Acc. No. PQ106982, CDK 203, NDRI, Isolated by Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 37°C, pH6.5, 24h

383 NSLAB NCBI Acc No.EU637377, Churpi cheese isolates, deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

384 NSLAB NCBI AccNo.EU637378, Churpi cheese isolate, deposited by Prashant, AMMAS Project MRS/YGLPB, 37°C

385 NSLAB NCBI AccNo.EU637379, Churpi cheese isolate, deposited by

Prashant, AMMAS Project MRS/YGLPB, 37°C

386 NSLAB NCBI AccNo.EU637380, Churpi cheese isolate, deposited by Prashant, AMMAS Project MRS/YGLPB, 37°C

387 NSLAB NCBI AccNo.EU637381, Churpi cheese isolate, deposited by Prashant, AMMAS Project MRS/YGLPB, 37°C

388 NSLAB NCBI AccNo.EU637382, Churpi cheese isolate, deposited by Prashant, AMMAS Project MRS/YGLPB, 37°C

389 NSLAB NCBI AccNo.EU637383, Churpi cheese isolate, deposited by Prashant, AMMAS Project MRS/YGLPB, 37°C

390 NSLAB NCBI AccNo.EU637384, Churpi cheese isolate, deposited by Prashant, AMMAS Project MRS/YGLPB, 37°C

391 NSLAB NCBI AccNo.EU637385, Churpi cheese isolate, deposited by Prashant, AMMAS Project MRS/YGLPB, 37°C

392 NSLAB NCBI AccNo.EU637386, Churpi cheese isolate, deposited by Prashant, AMMAS Project MRS/YGLPB, 37°C

394 NSLAB NCBI AccNo.EU637388, Churpi cheese isolate, deposited by Prashant, AMMAS Project MRS/YGLPB, 37°C

395 NSLAB NCBI AccNo.EU637389, Churpi cheese isolates, Isolated & deposited by Prashant, AMMAS Project MRS/YGLPB, 37°C

396 NSLAB NCBI AccNo.EU637390, Churpi cheese isolate, deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

397 NSLAB NCBI AccNo.EU637391, Churpi cheese isolate, deposited by Prashant, AMMAS Project MRS/YGLPB, 37°C

398 NSLAB NCBI AccNo.EU637392, Churpi cheese isolate, deposited by Prashant, AMMAS Project MRS/YGLPB, 37°C

413 NSLAB NCBI AccNo.EU886738, Churpi cheese isolate, deposited by Prashant, AMMAS Project MRS/YGLPB, 37°C

627 APD-L, Deposited by Shaik Abdul Hussain, MRS, 37°C, pH 4.72,16 h

730 Gene Bank Accession No. HM163466, CCC-8, Churpi Cheese, Gangtok, deposited by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

Lactiplantibacillus plantarum

(Orla-Jensen1919) Bergey's *et al*.1934

20 NDRI strain 184, MRS/Litmus milk, 37°C

21 NDRI strain 89, MRS/Litmus milk, 37°C

25 NDRI strain L-III, (*Lactobacillus arabinosus*), MRS/ Litmus milk, 37°C

183 Gene Bank Accession No. GQ183927, CM-2, Camel Cheese isolate, Isolated by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48 h,

190 Gene Bank Accession No. GQ183924, B-2-16, Camel Cheese isolate, Isolated by Dhiraj Nanda,

AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48h,

201 Strain LPR, Deposited by Dr. V. K. Nambudaripada, MRS, 30°C

227 Gene Bank Accession No. GQ183911, B-2-7, Camel Cheese isolate, Isolated by Dhiraj Nanda, AMMAS Project, 37°C, MRS Broth, pH 6-7, 24-48 h,

252 CDK 79, NDRI, Isolated & Deposited by Dr. Surajit Mandal, Dahi, MRS broth, 37ºC, 16-18 h

258 CDK 56, NDRI, Isolated & Deposited by Dr. Surajit Mandal, Dahi, MRS broth, 37ºC, 16-18 h

276 CPD 38, NDRI, Isolated & Deposited by Dr. Surajit Mandal Pickle, MRS broth, 37ºC, 16-18 h

344 Buffalo milk, deposited by Dr. V.K. Batish, MRS agar, 37ºC, pH 6.5, probiotic application

372 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, Isolated & deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

373 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, Isolated & deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

374 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, Isolated & deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

375 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, Isolated & deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

376 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

377 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, Isolated & deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

378 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, Isolated & deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

379 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, Isolated & deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

380 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, Isolated & deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

381 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

382 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, Isolated & deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

414 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, Isolated & deposited by Prashant,

AMMAS Project, MRS/YGLPB, 37°C

415 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, Isolated & deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

416 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, Isolated & deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

417 NSLAB, NCBI Acc No. EU637393, Churpi cheese isolates, Isolated & deposited by Prashant, AMMAS Project, MRS/YGLPB, 37°C

602 Isolated by Dr. J.B. Prajapati, Dahi, MRS Agar/Broth, 37°C, 24-48 hrs

624 APD-F, Deposited by Shaik Abdul Hussain, MRS, 37ºC, pH 4.9,16 h

625 APD-G, Deposited by Shaik Abdul Hussain MRS, 37ºC, pH4.92, 16 h

633 NCBI Acc. No. PP911437, D-1, Dahi Culture NCDC 159, deposited by Archana M & Diwas Pradhan, MRS broth/agar, 30°C, pH 6.5, 24 h

634 NCBI Acc. No. PP911439, D-3, Dahi Culture NCDC 153, deposited by Archana M & Diwas Pradhan, MRS broth/agar, 30°C, pH 6.5, 24 h

636 NCBI Acc No. PP916005, D-50, Dahi Culture NCDC 159, deposited by Archana M & Diwas Pradhan MRS broth/agar, 30°C, pH 6.5, 12-24 h

637 NCBI Acc No. PP916006, D-6, Dahi Culture NCDC 153, deposited by Archana M & Diwas Pradhan MRS broth/agar, 30°C, pH 6.5, 12-24 h

653 NDRI, BCF-20, Deposited by Bharat Bushan, Dr. S.K. Tomar, MRS Broth, 37°C, pH 4.7, 14-16 h, Antimicrobial Activity

654 NDRI, BHM-10, Deposited by Bharat Bushan, Dr. S.K. Tomar, MRS Broth, 37°C, pH 4.7, 14-16 h

655 NDRI, Deposited by Hitesh, Feces sample, ANTIF, MRS Broth, 37ºC, pH 6.5, 18 h

681 KSBT-56, Deposited by Dr. Pragya Tripathy, MRS, 37ºC, pH 6.5, 24-48 h

683 NCBI Acc. No. PQ115173, KSBT46, Deposited by Dr. Pragya Tripathy, Dahi chhenna, MRS broth, 37°C, pH-6.5, 24h

685 Deposited by Dr. Pragya Tripathy, MRS broth/agar, 37ºC, pH 6.5, 24-48h

687 DSMZ 2601, ATCC 10241, Deposited by Dinesh Dahiya, MRS broth, 30-37ºC, pH 6.5 (at 25ºC), 24-48 h

690 DDH1-60, Deposited by Dinesh Dahiya, MRS broth, 37ºC, pH 6.5(at 25ºC), 24-48 h,

691 DDH1-120, Deposited by Dinesh Dahiya, MRS broth, 37ºC, pH 6.5(at25ºC), 24-48 h

697 HAF 109, Deposited by Priti Devi, Human Subject, MRS broth/agar, 37ºC, 1-2 days

698 HAF 108, Deposited by Priti Devi, Human Subject, MRS broth/agar, 37ºC, 1-2 days

709 NCBI Acc No. 1660258, deposited by Dr. S. Varalakshmi & Dr. Bala V. Subramaniam, M-17, Skim milk, 30-37 °C, pH 5-7, 18-24 h

711 NCBI Acc No. 1661068, deposited by Dr. S. Balalakshmi & Dr. Bala V. Subramaniam, M-17, Skim milk, 30-37 °C, pH 5-7, 18-24 h

714 NCBI Acc No. 1661248, Dr. S. Varalakshmi & Dr. Bala V. Subramaniam, M-17, Skim milk, 30-37 °C, pH 5-7, 18-24 h

715 NCBI Acc No. 1661256, Dr. S. Varalakshmi & Dr. Bala V. Subramaniam, M-17, Skim milk, 30-37 °C, pH 5-7, 18-24 h

739 Gene Bank Accession No. HM163460, CCB-7, Churpi Cheese, deposited by Dhiraj Nanda, AMMAS Project, Gangtok, 37°C, MRS Broth, pH 6-7, 24-48h,

740 Gene Bank Accession No. HM163459, CCC-6, Churpi Cheese, deposited by Dhiraj Nanda, AMMAS Project, Gangtok, 37°C, MRS Broth, pH 6-7, 24-48h,

741 Gene Bank Accession No. HM163458, CCB-5, Churpi Cheese,deposited by Dhiraj Nanda, AMMAS Project, , Gangtok, 37°C, MRS Broth, pH 6-7, 24-48h,

742 Gene Bank Accession No. HM163457, CCB-4, Churpi Cheese, Isolated by Dhiraj Nanda, AMMAS Project, Gangtok, 37°C, MRS Broth, pH 6-7, 24-48h,

745 MRS broth/agar, 37°C, 1-2 days

792 Genbank accession no. OR844038, Silage, deposited by Dr. Nitin tyagi, Dr. Komal Chauhan, MRS broth, 37°C, pH 5.5-6.0, 24 h

793 Genbank accession no. OR844039, Silage, Dr. Nitin tyagi, Dr. Komal Chauhan, MRS broth, 37°C, pH 5.5-6.0, 24 h

Lacticaseibacillus rhamnosus

Hansen1968, Collins *et al.* 1989

19 NDRI strain 300 (*L. casei ssp. casei*), MRS/Litmus milk, 37°C

347 *Lactobacillus rhamnosus* GG (LGG) Probiotic, deposited by Manoj Kumar, Dr. P.K. Aggarwal

350 RS-12, Isolated from Camel milk, Bikaner, MRS broth, 37°C, 24h

354 RL-4, Isolated from Camel milk, Bikaner, MRS broth, 37°C, 24 h

601 52, deposited by Dr. J.B. Prajapati, traditional Dahi, MRS agar/broth, skim milk agar 37°C,12-24h.

626 APD-3, Deposited by Shaik Abdul Hussain MRS, 37C, pH 4.56, 16 h

729 MRS broth, 37°C, 12-24h

731 MRS broth, 37°C, 12-24 h

796 Genebank accession no. OR844042, Silage, Dr. Nitin tyagi, Dr. Komal Chauhan, MRS Broth, 37°C, pH- 5.5-6.0, 24 h

Limosilactobacillus reuteri

77 MRS, 37°C

791 Genbank accession no. OR844037, Silage,deposited by Dr. Nitin Tyagi,

Dr. Komal chauhan, Haryana, MRS Broth, 37°C, pH- 5.5-6.0, 2 4h

Latilactobacillus sakei subsp. Sakei

795 Genebank accession no. OR844041, Silage, Dr. Nitin tyagi, Dr. Komal Chauhan, MRS broth, 37°C, pH5.5 - 6.0, 24h

Ligilactobacillus salivarius

695 HAF 106, Deposited by Priti Devi, Humans subject, MRS broth/agar, 37°C, 1-2days

696 HAF 141, Deposited by Priti Devi, Humans subject, MRS broth/agar, 37°C, 1-2days

Lactococcus sp.

125 PM1, NDRI strain, deposited by Dr. R.K. Kuila, Litmaus milk, 30°C

127 A, isolated by Dr. M.P. Tiwari, NDRI, Litmus milk, 30°C, non curdling strain, high diacetyl producing, Indian Journal Dairy Science

130 S-1, NDRI strain, deposited by Dr. R.K. Kuila, Litmaus milk, 30°C

Lactococcus lactis

37 NCBI Acc. No. PQ109721, CDP 78, NDRI, Isolated from Pickle, deposited by Dr. Surajit Mandal, MRS Broth, 37ºC, pH 6.5, 16-18h

635 NCBI Acc. No. PQ114158, G8, deposited by Diwas Pradhan & Archana M., isolated from NCDC275, M-17, 30°C, pH 6.5-7, 24 h

642 G-2, deposited by Diwas Pradhan & Archana M., isolated from NCDC275, M-17, 30°C, 16-20h

643 NCBI Acc. No. PQ114531, G-3, deposited by Diwas Pradhan & Archana M., isolated from NCDC275, M-17, 30°C, 16-20h

644 NCBI Acc. No. PQ114715, G-10, deposited by Diwas Pradhan & Archana M., isolated from NCDC275, M-17, 30°C, 16-20h

645 NCBI Acc. No. PQ114716, G-1, deposited by Diwas Pradhan & Archana M., isolated from NCDC275, M-17, 30°C, 16-20h

672 NCBI Acc. No. PQ114758, UKTOR2, Ridge gourd, kotdwar, deposited by Poornima Rani, M-17, 30°C, pH-7.1, 18h

673 NCBI Acc. No. PQ115081, PUMBH1, Lady's finger, Moha, deposited by Poornima Rani, M-17, 30°C, pH-7.1, 18h

674 NCBI acc. No. PQ115093, TRBH1, Lady Finger, Trissur, deposited by Poornima Rani, M-17, 30°C, pH-7.1, 18h

675 NCBI Acc. No. PQ115135, HRP2, Pea, Hardwar, deposited by Poornima Rani, M-17, 30°C, pH-7.1, 18h

676 UKCA1, Carrot, kotdwar, deposited by Poornima Rani, M-17, 30°C, pH-7.1, 18h

677 NCBI Acc No. PQ113678, UKCA4, Carrot, kotdwar, deposited by Poornima Rani, M-17, 30°C, pH-7.1, 18h

678 NCBI Acc. No. PQ115144, UDSO1, spring onion, Dehradun, deposited

by Poornima Rani, M-17, 30°C, pH-7.1, 18h

692 NCBI Acc.No. PQ115146, KCWC2, white chick pea, Karnal, deposited by Poornima Rani, M-17, 30°C, 18h

693 NCBI Acc. No. PQ115150, KCWWF3, Crepe Jasmine, Karnal, deposited by Poornima Rani, M-17, 30°C, 18h

694 NCBI Acc. No. PQ119822, R1A-1, Colacassia, Ranchi deposited by Poornima Rani, M-17, 30°C, 18h

Lactococcus lactis ssp. cremoris

Orla-Jenson1919, Schleifer *et al.*1985

83 Hansen's strain, Litmus milk, 22°C

508 NCBI Accession no. PP928401, CDM 72, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

Lactococcus lactis ssp. lactis

Lister, 1873, Schliefer *et al*.1985

88 NCBI Accession No. PP908449, (*Streptococcus lactis*) YDB/Litmus milk, 30°C

99 CDM 43, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, MRS broth, 37°C, pH 7.0, 16-18h

100 NDRI S-18, (*Streptococcus lactis)*, YDB/Litmus milk, 30°C

101 ML2, (*Streptococcus lactis*), DR1, NZ, Litmus milk, 30°C

102 NDRI S-69, (*Streptococcus lactis)*, YDB/Litmus milk, 30°C

107 CDM 125, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

113 CDM 108, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, MRS broth, 37°C, pH7.0, 16-18h

155 CDM 105, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

157 NDRI 209, (*Streptococcus citrophilus*), YDB/Litmus milk, 30°C

175 CDK 113, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

191 NDRI Strain, Litmus milk, 25°C, Identified by 50 CH API, Ropy strain

193 NCBI Acc. No. PP911438, Strain S 9, Isolated by R.S. Singh, (*S lactis ssp. diacetylactis*), YDB/Litmus milk, 30°C

196 NDRI strain HP, YDB/Litmus milk, 30°C

198 NDRI strain R-7, Skim milk, 30°C

238 NDRI, Isolated from Dahi, M-17 broth, 30°C, pH7.0, 16-18h

319 Normal Elliker activity-0.38% Lactic acid Mixed starter, Deposited by Rameshwar Singh, YDB/Litmus milk, 30°C

336 CDK 116, NDRI, Isolated from Dahi, deposited by Dr. Surajit

Mandal, M-17 broth, 30°C, pH 7.0, 16-18h

337 CDK 64, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH 7.0, 16-18h

338 CDM 76, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH 7.0, 16-18h

339 CDM 48, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

340 CDK 138, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

341 CDM 74, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

355 CDM 38, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

360 CDM 44, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

362 CDM 33, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

363 CDK118, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

393 CDM121, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

402 B6 strain, deposited by Pradip V Behare, M-17 broth, 30°C, EPS producing

404 CDM106, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH 7.0, 16-18h

409 CDM 104, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

418 CDK 13, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

431 CDM116, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

432 CDM101, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

434 NCBI Accession no. PP920241, CDM115, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

448 NCBI Accession no. PP935347, CDM 4, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

449 NCBI Accession no. PP911433, CDK 132, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

452 NCBI Accession no. PP920227, CDM 107, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

460 NCBI Accession no. PP935422, CDK 137, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

465 CDK 103, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

471 NCBI Accession no. PP911435, CDK 93, NDRI, Isolated from Dahi, deposited by Dr. Surajit Mandal, M-17 broth, 30°C, pH7.0, 16-18h

611 Helix-1-1361, NRCLA and Yeast glucose broth, 30C, 24h

662 HRB, M-17, 42°C, pH-7,18h

663 KNDC-2, M-17, 30°C, pH-7,18h

664 UKBB-1, M-17, 30°C, pH-7,18h

666 KCWWF-1, M-17, 30°C, pH-7,18h

667 BOCPI, M-17, 30°C, pH-7,18h

668 TRBH-2, M-17, 30°C, pH-7,18h

669 HRB-2, M-17, 30°C, pH-7,18h

670 UDSO-5, M-17, 30°C, pH-7,18h

671 UKCA-3, M-17, 30°C, pH-7,18h

704 HP18, M-17, 37°C, 24h

705 HP65, M-17, 37°C, 24h

706 HP69, M-17, 37°C, 24h

707 HP80, M-17, 37°C, 24h

708 HP157, M-17, 37°C, 24h

Leuconostoc mesenteroides

620 NCBI Acc.No. PQ114576, Helix-5-1395, MRS, YGB, 0.75% agarsol, 30ºC, 24-48 h

639 NCBI Accession No. PP908462, D-55, Dahi Culture NCDC 159, deposited by Archana M & Diwas Pradhan MRS broth/agar, 30°C, pH 6.5, 12-24 h

58 NCBI Acc. No. PQ109188, CDG21, NDRI, Isolated by Goat Milk, deposited by Dr. Surajit Mandal, MRS broth, 30°C, pH 6.5, 24h

Leuconostoc mesenteroides ssp. dextranicum

Beryerinck 1912, Garvie 1983

419 NDRI strain F9, Isolated from flour sour dough, MRS broth, 30°C

420 NDRI strain F7, Isolated from flour sour dough, MRS broth, 30°C

422 NDRI strain MDC 2, Isolated from Dahi culture NCDC 159, MRS broth, 30°C

423 NDRI strain F4, Isolated from flour sour dough, MRS broth, 30°C

424 NDRI strain J2, Isolated from Jalebi sour dough, MRS broth, 30°C

425 NDRI strain F8, Isolated from flour sour dough, MRS broth, 30°C

426 NDRI strain J4, Isolated from Jalebi sour dough, MRS broth, 30°C

427 NDRI strain 8, Isolated from Dosa sour dough, MRS broth, 30°C

619 Helix-6-1354, MRS, yeast glucose broth 0.75% agarsol, 30C, 24-48h

Leuconostoc mesenteroides ssp. mesenteroides

Tsenkovski1878,van Tieghem1878

185 NDRI strain, YDB, 22°C

241 CDG 17, NDRI, Isolated by Goat Milk, deposited by Dr. Surajit Mandal, MRS broth, 30°C, pH6.5, 24h

294 CDG 24, NDRI, Isolated by Goat Milk, deposited by Dr. Surajit Mandal, MRS broth, 30°C, pH 6.5, 24h

348 BA08, MRS broth, 30°C

349 MRS broth, 30°C

351 NCBI Acc. No. PQ109717, MRS broth, 30°C, 18-24 h

421 NDRI strain ISO 4, Isolated from green vegetable, MRS broth, 30°C

590 Strain no. Ln 104, Isolated from Grape, Karnal, MRS broth, 30°C, pH6.0, 18-24h

591 strain no. Ln206, Isolated from Yak milk, MRS broth, 30ºC, pH6.0, 24h

Weisella cibaria

603 145, MRS agar/broth, skim milk agar

640 NCBI Accession no. PP920368, D-54, Dahi Culture NCDC 159, deposited by Archana M & Diwas Pradhan, MRS broth/agar, 30°C, pH 6.5, 12-24 h

Micrococcus luteus

174 NDRI strain (*Sarcina lutea*) Nutrient Agar, 37°C

Pediococcus acidilactici

Lindner1887

609 MGUH2, Raabadi, deposited by Sandip Basu, M-17 broth, 42°C, pH 7.1, 16-18h

Pediococcus pentosaceus

Mees 1934

182 P-94, NDRI, Isolated from Pickle, deposited by Dr. Surajit Mandal MRS Broth, 37ºC, pH 6.5, 16-18h

195 CDP 61, NDRI, Isolated from Pickle, deposited by Dr. Surajit Mandal, MRS Broth, 37ºC, pH 6.5, 16-18h

225 CPD 83, NDRI, Isolated from Pickle, deposited by Dr. Surajit Mandal, MRS Broth, 37ºC, pH 6.5, 16-18h

273 NDRI Strain 34, Deposited by K. Nageshwar Rao (1998), Produces bacteriocin, Five plasmids of 11, 4.6, 3.6, 3.2 and 2.1Mda, MRS,37°C

287 NCBI Acc. No. PQ108908, CDG 25, NDRI, Isolated by Goat Milk, deposited by Dr. Surajit Mandal, MRS broth, 30°C, pH 6.5, 24h

305 NCBI Acc. No. PQ108905, CDG22, NDRI, Isolated by Goat Milk, deposited by Dr. Surajit Mandal, MRS broth, 30°C, pH 6.5, 24h

322 NCBI Acc. No. PQ108906, CDG 23, NDRI, Isolated by Goat Milk, deposited by Dr. Surajit Mandal, MRS broth, 30°C, pH 6.5, 24h

331 P 67, NDRI, Isolated from Pickle, deposited by Dr. Surajit Mandal, MRS Broth, 37ºC, pH 6.5, 16-18h

332 CDPD 25, NDRI, Isolated from Pickle, deposited by Dr. Surajit Mandal, MRS Broth, 37ºC, pH 6.5, 16-18h

518 Sil-2, NDRI, Isolated from Silage, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

521 Sil-1, NDRI, Isolated from Silage, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

522 42-PD, NDRI, Isolated from Idli batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

527 25-PD, NDRI, Isolated from Idli batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

529 14-PD, NDRI, Isolated from Dosa batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

535 8-PD, NDRI, Isolated from Dosa batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

536 PD-45, NDRI, Isolated from Human faeces, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

537 PD-44, NDRI, Isolated from Buffalo milk, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

538 PD-41, NDRI, Isolated from Cow milk, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH6.8-7.0, 16-18h

539 PD-39, NDRI, Isolated from Fermented grape juice, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH6.8-7.0, 16-18h

540 PD-38, NDRI, Isolated from Dosa batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

542 PD-37, NDRI, Isolated from Fermented grape juice, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

546 PD-36, NDRI, Isolated from Fermented grape juice, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

547 PD-35, NDRI, Isolated from Fermented grape juice, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

549 PD-34, NDRI, Isolated from Fermented Vegetable, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

551 PD-33, NDRI, Isolated from Fermented Vegetable, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

552 PD-32, NDRI, Isolated from Fermented Vegetable, deposited by Dr. Surajit Mandal, Varsha Garg,

MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

555 PD-31, NDRI, Isolated from Fermented Vegetable, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

557 PD-30, NDRI, Isolated from Fermented Vegetable, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

563 PD-29, NDRI, Isolated from Fermented Vegetable, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

566 PD-28, NDRI, Isolated from Idli batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

567 PD-27, NDRI, Isolated from Idli batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

568 PD-26, NDRI, Isolated from Idli batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH6.8-7.0, 16-18h

569 PD-25, NDRI, Isolated from Dosa batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth,37ºC, pH 6.8-7.0, 16-18h

570 PD-24, NDRI, Isolated from Idli batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

572 PD-22, NDRI, Isolated from Dosa batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH6.8-7.0, 16-18h

574 PD-21, NDRI, Isolated from Dosa batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

576 PD-20, NDRI, Isolated from Dosa batter, MRS Broth, deposited by Dr. Surajit Mandal, Varsha Garg, 37ºC, pH6.8-7.0, 16-18h

577 PD-19, NDRI, Isolated from Dosa batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH6.8-7.0, 16-18h

579 PD-18, NDRI, Isolated from Idli batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH6.8-7.0, 16-18h

584 PD-16, NDRI, Isolated from Pickle, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH6.8-7.0, 16-18h

585 PD-14, NDRI, Isolated from Dosa batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

586 PD-13, NDRI, Isolated from Pickle, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

587 PD-10, NDRI, Isolated from Idli batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

588 PD-8, NDRI, Isolated from Idli batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

589 PD-7, NDRI, Butter milk, deposited by Dr. Surajit Mandal, Varsha

Garg, MRS Broth,37ºC,pH 6.8-7.0,16-18h

612 PD-4, NDRI, Isolated from Dosa batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0,16-18h

616 PD-3, NDRI, Isolated from Dosa batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0,16-18h

617 PD-2, NDRI, Isolated from Dosa batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0,16-18h

618 PD-1, NDRI, Isolated from Dosa batter, deposited by Dr. Surajit Mandal, Varsha Garg, MRS Broth, 37ºC, pH 6.8-7.0, 16-18h

Proteus vulgaris

Hauser 1885

73 Bhavan's College, Bombay Nutrient Agar,

Pseudomonas aeruginosa

(Schroeter 1872) Migula, 1900

105 Bhavan's College, Bombay Nutrient Agar, 22°C

Staphylococcus albus

111 NDRI Strain Nutrient Agar, 37°C

Staphylococcus aureus

Rosenbach1884

109 C-137, Nutrient Agar, 37°C

110 B-43-1, CRI, Kashauli, Nutrient agar, 37°C, weak coagulase positive test

133 NDRI strain, S.R. Jaishanker (Micrococcus caseolyticus) Nutrient Agar, 37°C

Salmonalla typhi

799 NDRI Strain, Nutrient Agar, 37°C

Streptococcus thermophilus

(Orla-Jenson1919) Farrow and Collins, 1984

57 Shu3, deposited by Kanchan Munjal, Dr. Pradip Behare, Curd Sample, M-17, 37°C, EPS Producing

103 MM1, deposited by Kanchan Munjal, Dr. Pradip Behare, Raw Milk Sample, M-17, 37°C, EPS Producing

74 NDRI strain Y-S Isolated from Yoghurt Litmus milk, 37°C

75 NDRI strain ST-S, Litmus milk, 37°C

158 Italian strain Litmus milk, 37°C

199 NDRI strain (*S. salivarius ssp. thermophilus*) Skim milk, 37°C

293 UKCt1, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

323 (GA), Skim mik, M-17 Broth, 37°C, 12h

324 (H), Deposited by Rameshwar Singh, Skim mik, M-17 Broth, 37°C, 12h

325 (MS), Skim mik, M-17 Broth, 37°C, 12h

345 V3, NDDB Project, M-17 Broth

346 JE, NDDB Project, M-17 Broth

429 M-17 broth, 42°C

430 Yoflex Chr.Hansen DVS culture, Isolated &deposited by T. Uma Maheshwari, M-17, 37°C/42°C, pH-6.5

433 UTNCt Strain, Isolated from Carrot, Tamil Nadu, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

435 UTNBt Strain, Isolated from Beet root, Jharkhand, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

437 UspD1, Isolated from Dahi, sonipat, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

438 UKD2 Strain, Isolated from Dahi, Jharkhand, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

440 Dahi UKD1, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

441 UttlCt Strain, Isolated from Dahi, Punjab, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

442 UKM1 Strain, Isolated from Milk, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

443 UBKLF2 Strain, Isolated from Lady's finger, Bikaner, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

444 UKS01 Strain, Isolated from spring onion, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

445 UYNCF Strain, Isolated from Cauliflower, Yamuna Nagar, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

446 UMbM1 Strain, Isolated from Milk, Mumbai, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

447 UTNM1 strain, Isolated from Milk, Tamil Nadu, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

450 UPD5 Strain, Isolated from capsicum, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

451 UMBD1 Strain, Isolated from Dahi, Mumbai, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

453 UhrPt Strain, Isolated from Potato, Haridwar, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

454 UjdD1 Strain, Isolated from Dahi, Jharkhand, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

544 UKM3 Strain, Isolated from Milk, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

455 UhrCb1 Strain, Isolated from Cabbage, Haridwar, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

456 UhwCh2 Strain, Isolated from Cabbage, Haridwar, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

457 UKFC 1 Strain, Isolated from dosa batter, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

458 UKFC 2 Strain, Isolated from dosa batter, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

459 UKFc 3 Strain, Isolated from Dosa batter, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

461 UMBGC1 Strain, Isolated from green Chilli, Mumbai, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

462 UjpCb Strain, Isolated from Carrot, Tamil Nadu, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

463 UjpCt Strain, Isolated from Carrot, Jaipur, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

464 Ukch1 Strain, Isolated from Cheese, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

466 UKCu2 Strain, Isolated from Cucumber, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

467 UspGC Strain, Isolated from Green Chilli, Sonipat, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C,pH-6.5

468 UmbFG Strain, Isolated from Fenugreek, Tamil Nadu, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

469 UdnSO Strain, Isolated from Spring Onion, Dehradun, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

470 UYND1 Strain, Isolated from Dahi, Yamuna nagar, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

472 UKFM2 Strain, Isolated from Fodder Maize, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

473 UKFM4 Strain, Isolated from Fodder Maize, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

474 UKFM4 Strain, Isolated from Fodder Maize, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

475 UbkLF1 Strain, Isolated from Lady's finger, Karnal b, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

476 UBKCB 2 Strain, Isolated from Cluster bean 2, Bikaner, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

477 NCBI accession no. ONO56158, UPGC Strain, Isolated from green chilli, Punjab, Isolated & deposited

by T. Uma Maheshwari, M-17, 42°C, pH-6.5

478 UKGC Strain, Isolated from green chilli, Karnal, Isolated & deposited by T. Uma Maheshwari, M 17, 42°C, pH-6.5

479 UJKCF Strain, Isolated from Cauliflower, Jharkhand, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

480 UTNR Strain, Isolated from Radish, Tamil Nadu, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

481 UKMB Strain, Isolated from Moth Bean, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

482 UYNFG1 Strain, Isolated from Fenugreek, Yamuna Nagar, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

483 AURjLF Strain, Isolated from Carrot, Kerala, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

484 AUUtPk Strain, Isolated from Spring Onion, Tamil Nadu, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

485 NCBI Accession No. ONO59661, UKD2 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

486 UKD4 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

487 UKD5 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

488 UKD7 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

489 AUPpSO Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

490 UKD9 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

491 UKD10 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

492 UKD11 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

493 UKD12 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

494 UKD13 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

495 UKD14 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

496 UKD15 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

497 UKD16 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

498 UKD17 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

499 UKD18 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

500 UKD19 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

501 UKD20 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

502 UKD21 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

503 UKD22 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

504 UKD23 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

505 UKD24 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

506 UKD26 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

507 UKD27 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

509 UKD29 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

510 UKD30 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

511 UKD31 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

512 UKD32 Strain, Isolated from Carrot, Tamil Nadu, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

513 UKD33 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

514 UKD34 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

515 UKD35 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

516 UKD36 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C,pH-6.5

517 UKD37 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

519 UKD39 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

520 UKD40 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

523 AUKD2 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

524 AUKD3 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

525 AUKD4 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

526 AUKD5 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

528 AUKD9 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

530 AUKD13 Strain, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

531 UpjD2 Strain, Isolated from Dahi, Punjab, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

532 UpjD3 Strain, Isolated from Dahi, Punjab, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

533 UpjD4 Strain, Isolated from Dahi, Punjab, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

534 UpjD5 Strain, Isolated from Dahi, Punjab, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

541 UKCH2 Strain, Isolated from Cheese, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

543 UKM2 Strain, Isolated from Milk, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

545 UmbM2 Strain, Isolated from Milk, Mumbai, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

548 UhrGC1 Strain, Isolated from Green Chilli, Haridwar, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

550 UhrR1 Strain, Isolated from Radish, Haridwar, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

553 UKCt1 Strain, Isolated from Carrot, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

554 UKCt2 Strain, Isolated from Carrot, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

556 UKSr1 Strain, Isolated from Ivy Gourd, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

558 UKBg1 Strain, Isolated from Bitter Gourd, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

559 UKCu1 Strain, Isolated from Cucumber, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

560 UKCu3 Strain, Isolated from Cucumber, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

561 UKBCt Strain, Isolated from Black carrot, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

562 UKPt1 Strain, Isolated from Potato, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

564 UKSp1 Strain, Isolated from Spinach, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

565 UKSP2 Strain, Isolated from Spinach, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

571 AUKLF Strain, Isolated from Lady's Finger, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

573 Uppca1 Strain, Isolated from Goose foot, Panipat, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

575 UutCt1 Strain, Isolated from Carrot, Uttaranchal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

578 UMBCt1 Strain, Isolated from Carrot, Mumbai, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

580 UmbRd2 Strain, Isolated from Radish, Mumbai, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

581 AUYNRd Strain, Isolated from Radish, Yamuna Nagar, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

582 UrjCu1 Strain, Isolated from Cucumber, Rajasthan, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

583 AURjCb Strain, Isolated from Cabbage, Rajasthan, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

659 AJM, Raw milk, deposited by Anbu Kkarasi, M-17, 42°C, pH-7, 18h

660 NCBI Acc. No. ONO59644, JM-1, Raw milk, deposited by Anbu Kkarasi, M-17, 42°C, pH-7, 18h

699 AUHrGC, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

712 UKCp2 Strain, Isolated from Curd, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

746 AUKD6 Strain, Isolated from Curd, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

749 Sha5, Curd Sample, deposited by Kanchan Munjal, Dr. Pradip Behare, M-17, 37°C, EPS Producing

750 Shiv1, Curd Sample, deposited by Kanchan Munjal, Dr. Pradip Behare, M-17, 37°C, EPS Producing

751 Wdw1, Curd Sample, deposited by Kanchan Munjal, Dr. Pradip Behare, M-17, 37°C, EPS Producing

752 Grv3, Curd Sample, deposited by Kanchan Munjal, Dr. Pradip Behare, M-17, 37°C, EPS Producing

753 Kan3, Curd Sample, deposited by Kanchan Munjal, Dr. Pradip Behare, M-17, 37°C, EPS Producing

756 Vis4, Curd Sample, deposited by Kanchan Munjal, Dr. Pradip Behare, M-17, 37°C, EPS Producing

757 Ram1, Curd Sample, deposited by Kanchan Munjal, Dr. Pradip Behare, M-17, 37°C, EPS Producing

758 Ram 9, Curd Sample, deposited by Kanchan Munjal, Dr. Pradip Behare, M-17, 37°C, EPS Producing

801 NSP5, Curd Sample, deposited by Kanchan Munjal, Dr. Pradip Behare, M-17, 37°C, EPS Producing

802 Kri 3, Curd Sample, deposited by Kanchan Munjal, Dr. Pradip Behare, M-17, 37°C, EPS Producing

803 Dam 2, Curd Sample, deposited by Kanchan Munjal, Dr. Pradip Behare, M-17, 37°C, EPS Producing

FUNGAL CULTURES

Aspergillus flavus

226 Isolated from animal feed, NDRI, Karnal Isolated by Kishan Singh, 1989-93 Produces aflatoxin PDA, 25ºC

268 Isolated by Jyoti Malhotra from Khoa samples Sensitive to fungi static preservatives like Sod. Benzoate, Pot. Sorbate, Sod. Salt of propy paraben and propionic acid, PDA, 28°C

Aspergillus niger

55 IARI, New Delhi PDA, 25°C

267 Isolated by Jyoti Malhotra Sensitive to fungistatic preservatives like Sodium benzoate, Potasium Sorbate, Sodium salt of propyl paraben and propionic acid, PDA, 28°C

315 CTRL, Bombay, deposited by Raman malik, PDA, 25°C

Aspergillus oryae

798 NDRI Strain, PDA, 25°C

Aspergillus parasiticus

53 NRRL 2999PDA, 25°C

54 NRRL 2999PDA, 25°C

Odium sp.

59 IARI, New Delhi PDA, 25°C

Rhizopus oryzae

52 IARI, New Delhi, PDA, 25°C

Kluyveromyces marxianus

39 NRRL 3224, Sacchromyces fragilis, PDA, 25°C

46 NRRL 3217, Saccharomyces fragilis, PDA, 25°C

Saccharomyces cerevisiae

42 NDRI strain PDA, 25ºC

45 HAU, Hisar, University of California, Davis 522

50 NDRI strain A-2, PDA, 25°C

186 Strain SCWC, ShawWallace, Calcutta Distillery strain, PDA, 25°C

189 Italian strain, SC-1, PDA, 25°C

364 deposited by Kalpna dixit, Yeast Peptone Dextrose, pH 5.5, 37°C

365 Isolated from kefir, Deposited by Kalpna dixit, Yeast Peptone Dextrose, pH 5.5, 37°C

Torulopsis candida

43 NCTC 389, PDA, 25°C

188 NRRL 3234, PDA, 25°C

CHEESE CULTURES

152 Commercial culture BC-1, Skim milk, 25°C

162 NDRI cheese starter, Skim milk, 25°C

163 Commercial starter 3GM-6, Skim milk, 25°C

164 Commercial starter CH-95, Skim milk, 25°C

165 Commercial starter CH-21, Skim milk, 25°C

202 Strain BK-5, Skim milk, 25°C

256 O type, mixed, Skim milk, 25°C

270 DVS for Adam cheese, Mixed commercial starter, YDB/Skim milk, 25°C

275 Mixed cheese starter for Cheddar Cheese, Skim milk, 22°C

DAHI/LASSI CULTURES

007 NDRI (NCDC441+193),deposited by Siddharth Bhatt, Skim Milk, 42°C, 3-4h, Diacetyl Producing

011 NDRI (NCDC 441+62), deposited by Siddharth Bhatt, Skim Milk, 42°C, 3-4h, Diacetyl Producing

153 NDRI Strain, Skim milk, 37°C

159 NDRI Strain, Skim milk, 25°C

160 NDRI Strain, Skim milk, 25°C

161 NDRI Strain, Skim milk, 25°C

166 NDRI Strain, Skim milk, 25°C

167 NDRI Strain, Skim milk, 37°C

261 Mixed commercial starter, LD type Skim milk, 25°C

YOGHURT/MOZZAREL A CHEESE STARTERS

144 NDRI Yoghurt culture YH-3, Skim milk, 37°C

145 NDRI Yoghurt culture YC, Skim milk, 37°C

146 NDRI Yoghurt culture B-5, Skim milk, 37°C

260 Type M, High viscosity, ropy texture, very smooth, creamy good for stirred yoghurt, Skim milk/Litmus milk, 37°C

262 Mixed yoghurt culture, Litmus milk, 37°C

263 Commercial mixed culture YC-281, good for making stirred yoghurt, slightly ropy, high viscosity, mild flavor, Skim milk, 37°C

300 Deposited by Rameshwar Singh, Good Mozzarella and Yoghurt Culture, Skim milk, 37°C

ACIDOPHILUS MILK STARTERS

All strains of ***Lactobacillus acidophilus***

Numeric Index of Cultures in General Deposits

Accession no.	Organism
01	*Levilactobacillus brevis*
04	*Lactobacillus delbrueckii ssp. bulgaricus*
07	*Dahi Culture*
08	*Lactobacillus delbrueckii ssp. bulgaricus*
11	*Dahi Culture*
13	*Lactobacillus acidophilus*
17	*Lacticaseibacillus casei ssp. casei*
19	*Lacticaseibacillus rhamnosus*
20	*Lactiplantibacillus plantarum*
21	*Lactiplantibacillus plantarum*
22	*Lacticaseibacillus paracasei ssp. paracasei*
25	*Lactiplantibacillus plantarum*
26	*Lacticaseibacillus casei ssp. casei*
27	*Lacticaseibacillus casei ssp. casei*
28	*Levilactobacillus brevis*
35	*Lactobacillus helveticus*
36	*Levilactobacillus brevis*
37	*Lactococcus lactis*
38	*Streptococcus thermophilus*
39	*Kluyveromyces marxianus*
40	*Lactobacillus delbrueckii*
41	*Lacticaseibacillus casei ssp. casei*
42	*Saccharomyces cerevisiae*
43	*Tarulpsis candida*
45	*Saccharomyces cerevisiae*
46	*Kluyveromyces marxianus*
50	*Saccharomyces cerevisiae*
52	*Rhizopus oryzae*
53	*Aspergillus parasiticus*
54	*Lactobacillus casei ssp. Casei*
55	*Aspergillus niger*
58	*Leuconostoc mesenteroides*
59	*Odium Sp.*
63	*Lacticaseibacillus casei ssp. casei*
65	*Desulfotomaculum riminis*
67	*Bacillus megaterium*
70	*Bacillus subtilis*
72	*Acetobacter johnsonii*
73	*Proteus vulgaris*
74	*Streptococcus thermophilus*
75	*Streptococcus thermophilus*
77	*Limosilactobacillus ruteri*
78	*Lacticaseibacillus casei ssp. casei*
80	*Lacticaseibacillus casei ssp. casei*
83	*Lactococcus lactis ssp. cremoris*
88	*Lactococcus lactis ssp. Lactis*
89	*Enterococcus faecalis*
92	*Lacticaseibacillus paracasei ssp. paracasei*
93	*Enterococcus faecalis*
99	*Lactococcus lactis ssp. Lactis*

100	*Lactococcus lactis ssp. Lactis*
102	*Lactococcus lactis ssp. Lactis*
105	*Pseudomonas aeruginosa*
106	*Enterobacter aerogenes*
107	*Lactococcus lactis ssp. lactis*
109	*Staphylococcus aureus*
110	*Staphylococcus aureus*
111	*Staphylococcus albus*
113	*Lactococcus lactis ssp.lactis*
114	*Enterococcus faecalis*
115	*Enterococcus faecalis*
117	*Enterococcus faecalis*
118	*Lacticaseibacillus paracasei*
119	*Enterococcus faecalis*
120	*Enterococcus faecalis*
121	*Lacticaseibacillus casei*
122	*Enterococcus faecalis*
125	*Lactococcus spp.*
126	*Lacticaseibacillus casei*
127	*Lactococcus sp.*
128	*Enterococcus faecalis*
130	*Lactococcus sp.*
131	*Lacticaseibacillus casei*
132	*Lacticaseibacillus casei*
133	*Micrococcus caseolgticus*
136	*Lacticaseibacillus casei*
137	*Acetobacter aceti*
138	*Klebsiella pneuminiae*
140	*Lacticaseibacillus paracasei*
142	*Lacticaseibacillus casei*
144	*Yoghurt Mix Culture*
145	*Yoghurt Mix Culture*
146	*Yoghurt Mix Culture*
152	*Cheddar Cheese Cultue*
153	Dahi Culture
154	*Lacticaseibacillus paracasei*
155	*Lactococcus lactis ssp.lactis*
157	*Lactobacillus lactis ssp. lactis*
158	*Streptococcus thermophilus*
159	Dahi Culture
160	Dahi Culture
161	Dahi Culture
162	*Cheddar Cheese Cultue*
163	*Cheddar Cheese Cultue*
164	*Cheddar Cheese Cultue*
165	*Cheddar Cheese Cultue*
166	Dahi Culture
167	Dahi Culture
170	*Lacticaseibacillus casei*
171	*Lacticaseibacillus casei*
173	*Enterobacter aerogenes*
174	*Micrococcus luteus*
175	*Lactococcus lactis ssp.lactis*

176	*Lacticaseibacillus paracasei*
178	*Lacticaseibacillus paracasei*
179	*Lacticaseibacillus casei*
180	*Bacillus cereus*
181	*Lacticaseibacillus casei*
182	*Pediococcus pentosaceus*
183	*Limosilactobacillus fermentum*
184	*Lactobacillus delbrueckii ssp. bulgaricus*
185	*Leuconostoc mesenteroides ssp. mesenteroides*
186	*Saccharomyces cerevisiae*
188	*Tarulopsis candida*
189	*Saccharomyces cerevisiae*
190	*Lactiplantibacillus plantarum*
191	*Lactococcus lactis ssp.lactis*
193	*Lactococcus lactis ssp. lactis*
194	*Lactobacillus delbrueckii*
195	*Pediococcus pentosaceus*
196	*Lactococcus lactis ssp. lactis*
198	*Lactococcus lactis ssp. lactis*
199	*Streptococcus thermophilus*
201	*Lactiplantibacillus plantarum*
202	*Cheese culture*
205	*Bacillus cereus*
209	*Escherichia Coli*
210	*Limosilactobacillus fermentum*
213	*Lactobacillus delbrueckii*
217	*Lactobacillus delbrueckii*
218	*Lactobacillus delbrueckii*
220	*Limosilactobacillus fermentum*
222	*Limosilactobacillus fermentum*
225	*Pediococcus pentosaceus*
226	*Aspergillus flavus*
227	*Lactiplantibacillus plantarum*
228	*Lactobacillus delbrueckii*
229	*Lactobacillus delbrueckii*
230	*Lactobacillus delbrueckii*
231	*Bifidobacterium bifidum*
232	*Bifidobacterium bifidum*
233	*Bifidobacterium bifidum*
234	*Lactobacillus delbrueckii*
235	*Lactobacillus delbrueckii*
236	*Bifidobacterium adolescentis*
238	*Lactococcus lactis ssp. lactis*
241	*Leuconostoc mesenteroides ssp. mesenteroides*
247	*Lactobacillus delbrueckii*
248	*Limosilactobacillus fermentum*
250	*Limosilactobacillus fermentum*
251	*Limosilactobacillus fermentum*
252	*Limosilactobacillus fermentum*
254	*Limosilactobacillus fermentum*
255	*Limosilactobacillus fermentum*
256	*Cheese Culture*
258	*Lactiplantibacillus plantarum*

260	*Yoghurt Culture*
261	*Dahi Culture*
262	*Yoghurt Culture*
263	*Yoghurt Culture*
264	*Limosilactobacillus fermentum*
265	*Limosilactobacillus fermentum*
266	*Bacillus lichenifarmis*
267	*Aspergillus niger*
268	*Aspergillus flavus*
270	*Cheese Culture*
271	*Lactobacillus delbrueckii*
272	*Lacticaseibacillus casei*
273	*Pediococcus pentosaceus*
275	*Cheese culture*
276	*Lactiplantibacillus plantarum*
281	*Lactobacillus delbrueckii ssp. bulgaricus*
287	*Pediococcus pentosaceus*
290	*Lactobacillus delbrueckii ssp. lactis*
291	*Lactobacillus acidophilus*
292	*Lactobacillus helveticus*
293	*Streptococcus thermophilus*
294	*Leuconostoc mesenteroides ssp. mesenteroides*
295	*Lactobacillus delbrueckii*
297	*Lacticaseibacillus casei*
298	*Lacticaseibacillus casei*
299	*Lacticaseibacillus casei*
300	*Mixed Yoghurt Culture*
301	*Limosilactobacillus fermentum*
305	*Pediococcus pentosaceus*
307	*Lactobacillus delbrueckii*
315	*Aspergillus niger*
317	*Lactobacillus delbrueckii*
318	*Lactobacillus delbrueckii ssp. bulgaricus*
319	*Lactococcus lactis ssp. lactis biovar*
320	*Limosilactobacillus fermentum*
321	*Limosilactobacillus fermentum*
322	*Pediococcus pentosaceus*
323	*Streptococcus thermophilus*
324	*Streptococcus thermophilus*
325	*Streptococcus thermophilus*
328	*Geobacillus stearothermophilus*
331	*Pediococcus pentosaceus*
332	*Pediococcus pentosaceus*
333	*Lactobacillus sp.*
335	*Lacticaseibacillus paracasei*
336	*Lactococcus lactis ssp. Lactis*
337	*Lactococcus lactis ssp. Lactis*
338	*Lactococcus lactis ssp. Lactis*
339	*Lactococcus lactis ssp. Lactis*
340	*Lactococcus lactis ssp. Lactis*
341	*Lactococcus lactis ssp. Lactis*
342	*Lactobacillus delbrueckii ssp. bulgaricus*
343	*Lactobacillus acidophilus*

344	*Lactiplantibacillus plantarum*
345	*Streptococcus thermophilus*
346	*Streptococcus thermophilus*
347	*Lacticaseibacillus rhamnosus*
348	*Leuconostoc mesenteroides ssp. mesenteroides*
349	*Leuconostoc mesenteroides ssp. mesenteroides*
350	*Lacticaseibacillus rhamnosus*
351	*Leuconostoc mesenteroides ssp. mesenteroides*
354	*Lacticaseibacillus rhamnosus*
355	*Lactococcus lactis ssp. Lactis*
356	*Lacticaseibacillus argentoratensis*
357	*Lacticaseibacillus casei ssp. casei*
358	*Lacticaseibacillus casei ssp. casei*
359	*Lacticaseibacillus casei ssp. casei*
360	*Lactococcus lactis ssp. Lactis*
361	*Escherichia coli*
362	*Lactococcus lactis ssp. Lactis*
363	*Lactococcus lactis ssp. Lactis*
364	*Saccharomyces cersvisiae*
365	*Saccharomyces cersvisiae*
366	*Lactobacillus corniformis*
367	*Lactobacillus corniformis*
368	*Lactobacillus corniformis*
369	*Lactobacillus corniformis*
370	*Lactobacillus helvaticus*
371	*Levilactobacillus brevis*
372	*Lactiplantibacillus plantarum*
373	*Lactiplantibacillus plantarum*
374	*Lactiplantibacillus plantarum*
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376	*Lactiplantibacillus plantarum*
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379	*Lactiplantibacillus plantarum*
380	*Lactiplantibacillus plantarum*
381	*Lactiplantibacillus plantarum*
382	*Lactiplantibacillus plantarum*
383	*Lacticaseibacillus paracasei*
384	*Lacticaseibacillus paracasei*
385	*Lacticaseibacillus paracasei*
386	*Lacticaseibacillus paracasei*
387	*Lacticaseibacillus paracasei*
388	*Lacticaseibacillus paracasei*
389	*Lacticaseibacillus paracasei*
390	*Lacticaseibacillus paracasei*
391	*Lacticaseibacillus paracasei*
392	*Lacticaseibacillus paracasei*
393	*Lactococcus lactis ssp. lactis*
394	*Lacticaseibacillus paracasei*
395	*Lacticaseibacillus paracasei*
396	*Lacticaseibacillus paracasei*
397	*Lacticaseibacillus paracasei*
398	*Lacticaseibacillus paracasei*

402	*Lactococcus lactis ssp. lactis*
403	*Levilactobacillus brevis*
404	*Lactococcus lactis ssp. lactis*
405	*Lactobacillus delbrueckii*
406	*Limosilactobacillus fermentum*
407	*Limosilactobacillus fermentum*
408	*Limosilactobacillus fermentum*
409	*Limosilactobacillus fermentum*
410	*Limosilactobacillus fermentum*
411	*Limosilactobacillus fermentum*
412	*Limosilactobacillus fermentum*
413	*Lacticaseibacillus paracasei*
414	*Lactiplantibacillus plantarum*
415	*Lactiplantibacillus plantarum*
416	*Lactiplantibacillus plantarum*
417	*Lactiplantibacillus plantarum*
418	*Lactococcus lactis ssp. lactis*
419	*Leuconostoc dextranicum*
420	*Leuconostoc dextranicum*
421	*Leuconostoc mesenteroides*
422	*Leuconostoc dextranicum*
423	*Leuconostoc dextranicum*
424	*Leuconostoc dextranicum*
425	*Leuconostoc dextranicum*
426	*Leuconostoc dextranicum*
427	*Leuconostoc dextranicum*
429	*Streptococcus thermophilus*
430	*Streptococcus thermophilus*
431	*Lactococcus lactis ssp. lactis*
432	*Lactococcus lactis ssp. lactis*
434	*Lactococcus lactis ssp. lactis*
437	*Streptococcus thermophilus*
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448	*Lactococcus lactis ssp. lactis*
449	*Lactococcus lactis ssp. lactis*
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459	*Streptococcus thermophilus*
460	*Lactococcus lactis ssp. lactis*

461	*Streptococcus thermophilus*
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465	*Lactococcus lactis ssp. lactis*
466	*Streptococcus thermophilus*
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470	*Streptococcus thermophilus*
471	*Lactococcus lactis ssp. lactis*
472	*Streptococcus thermophilus*
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506	*Streptococcus thermophilus*
507	*Streptococcus thermophilus*
508	*Lactococcus lactis ssp. lactis*
509	*Streptococcus thermophilus*
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514	*Streptococcus thermophilus*
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516	*Streptococcus thermophilus*
517	*Streptococcus thermophilus*
518	*Lactococcus lactis ssp. lactis*
519	*Streptococcus thermophilus*
520	*Streptococcus thermophilus*
521	*Pediococcus pentosaceus*
522	*Pediococcus pentosaceus*
523	*Streptococcus thermophilus*
524	*Streptococcus thermophilus*
525	*Streptococcus thermophilus*
526	*Streptococcus thermophilus*
527	*Pediococcus pentosaceus*
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529	*Pediococcus pentosaceus*
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535	*Pediococcus pentosaceus*
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540	*Pediococcus pentosaceus*
541	*Streptococcus thermophilus*
542	*Pediococcus pentosaceus*
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545	*Streptococcus thermophilus*
546	*Pediococcus pentosaceus*
547	*Pediococcus pentosaceus*
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563	*Pediococcus pentosaceus*
564	*Streptococcus thermophilus*
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567	*Pediococcus pentosaceus*

568	*Pediococcus pentosaceus*
569	*Pediococcus pentosaceus*
570	*Pediococcus pentosaceus*
571	*Streptococcus thermophilus*
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575	*Streptococcus thermophilus*
576	*Pediococcus pentosaceus*
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582	*Streptococcus thermophilus*
583	*Streptococcus thermophilus*
584	*Pediococcus pentosaceus*
585	*Pediococcus pentosaceus*
586	*Pediococcus pentosaceus*
587	*Pediococcus pentosaceus*
588	*Pediococcus pentosaceus*
589	*Pediococcus pentosaceus*
590	*Leuconostoc mesenteroid ssp. mesenteroid*
591	*Leuconostoc mesenteroid ssp. mesenteroid*
597	*Enterococcus lactis*
598	*Bacillus licheniformis*
600	*Lactobacillus acidophillus*
601	*Lacticaseibacillus rhamnosus*
602	*Lactiplantibacillus plantarum*
603	*Weisella cibarica*
604	*Limosilactobacillus fermentum*
606	*Limosilactobacillus fermentum*
607	*Limosilactobacillus fermentum*
608	*Limosilactobacillus fermentum*
609	*Pediococcus acidilactici*
611	*Lactococcus lactis ssp. lactis*
612	*Pediococcus pentosaceus*
613	*Lactobacillus niridescence*
614	*Ligilactobacillus agilis*
615	*Lactobacillus equi*
616	*Pediococcus pentosaceus*
617	*Pediococcus pentosaceus*
618	*Pediococcus pentosaceus*
619	*Leuconostoc mesenteroid ssp. dextranicum*
620	*Leuconostoc mesenteroides*
624	*Lactiplantibacillus plantarum*
625	*Lactiplantibacillus plantarum*
626	*Lacticaseibacillus rhamnosus*
627	*Lacticaseibacillus paracasei ssp. paracasei*
628	*Lactobacillus delbrueckii ssp. bulgaricus*
629	*Lactobacillus delbrueckii ssp. bulgaricus*
630	*Lactobacillus delbrueckii ssp. bulgaricus*
631	*Lactobacillus delbrueckii ssp. bulgaricus*

632	*Lactobacillus delbrueckii ssp. bulgaricus*
633	*Lactiplantibacillus plantarum*
634	*Lactiplantibacillus plantarum*
635	*Lactococcus lactis*
636	*Lactiplantibacillus plantarum*
637	*Lactiplantibacillus plantarum*
638	*Enterococcus faecium*
639	*Leuconostoc mesenteroides*
640	*Weisella cibaria*
641	*Enterococcus faecium*
642	*Lactococcus lactis*
643	*Lactococcus lactis*
644	*Lactococcus lactis*
645	*Lactococcus lactis*
652	*Limosilactobacillus fermentum*
653	*Lactiplantibacillus plantarum*
654	*Lactiplantibacillus plantarum*
655	*Lactiplantibacillus plantarum*
656	*Lactiplantibacillus plantarum*
657	*Bifidobacteria sp.*
658	*Bifidobacteria sp.*
659	*Streptococcus thermophilus*
660	*Streptococcus thermophilus*
661	*Bifidobacteria sp.*
662	*Lactococcus lactis ssp. lactis*
663	*Lactococcus lactis ssp. lactis*
664	*Lactococcus lactis ssp. lactis*
665	*Bifidobacteria sp.*
666	*Lactococcus lactis ssp. lactis*
667	*Lactococcus lactis ssp. lactis*
668	*Lactococcus lactis ssp. lactis*
669	*Lactococcus lactis ssp. lactis*
670	*Lactococcus lactis ssp. lactis*
671	*Lactococcus lactis ssp. lactis*
672	*Lactococcus lactis*
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674	*Lactococcus lactis*
675	*Lactococcus lactis*
676	*Lactococcus lactis*
677	*Lactococcus lactis*
678	*Lactococcus lactis*
679	*Bifidobacteria sp.*
680	*Dellaglioa algida*
681	*Lactiplantibacillus plantarum*
682	*Limosilactobacillus fermentum*
683	*Lactiplantibacillus plantarum*
684	*Lacticaseibacillus casei*
685	*Lactiplantibacillus plantarum*
687	*Lactiplantibacillus plantarum*
688	*Lactobacillus gasseri*
689	*Bifidobacterium animalis*
690	*Lactiplantibacillus plantarum*
691	*Lactobacillus plantarum*

692	*Lactococcus lactis*
694	*Lactococcus lactis*
695	*Ligilactobacillus salivarius*
696	*Ligilactobacillus salivarius*
697	*Lactiplantibacillus plantarum*
698	*Lactiplantibacillus plantarum*
699	*Streptococcus thermophilus*
700	*Limosilactobacillus fermentum*
701	*Limosilactobacillus fermentum*
702	*Lactobacillus acidophilus*
703	*Bifidobacterium bifidum*
704	*Lactococcus lactis ssp. lactis*
705	*Lactococcus lactis ssp. lactis*
706	*Lactococcus lactis ssp. lactis*
707	*Lactococcus lactis ssp. lactis*
708	*Lactococcus lactis ssp. lactis*
709	*Lactiplantibacillus plantarum*
710	*Lactobacillus delbrueckii ssp. bulgaricus*
711	*Lactiplantibacillus plantarum*
712	*Streptococcus thermophilus*
713	*Limosilactobacillus fermentum*
714	*Lactiplantibacillus plantarum*
715	*Lactiplantibacillus plantarum*
716	*Limosilactobacillus fermentum*
717	*Limosilactobacillus fermentum*
718	*Limosilactobacillus fermentum*
719	*Limosilactobacillus fermentum*
720	*Limosilactobacillus fermentum*
721	*Limosilactobacillus fermentum*
722	*Limosilactobacillus fermentum*
723	*Limosilactobacillus fermentum*
724	*Limosilactobacillus fermentum*
725	*Limosilactobacillus fermentum*
726	*Lacticaseibacillus casei ssp. casei*
727	*Lacticaseibacillus casei ssp. casei*
728	*Lacticaseibacillus casei ssp. casei*
729	*Lacticaseibacillus rhamnosus*
730	*Lacticaseibacillus paracasei ssp. pracasei*
731	*Lacticaseibacillus rhamnosus*
732	*Lacticaseibacillus casei ssp. casei*
733	*Lacticaseibacillus casei ssp. casei*
734	*Lacticaseibacillus casei ssp. casei*
735	*Lacticaseibacillus casei ssp. casei*
736	*Lacticaseibacillus casei ssp. casei*
737	*Lacticaseibacillus casei ssp. casei*
738	*Lacticaseibacillus casei ssp. casei*
739	*Lactiplantibacillus plantarum*
740	*Lactiplantibacillus plantarum*
741	*Lactiplantibacillus plantarum*
742	*Lactiplantibacillus plantarum*
743	*Lactobacillus delbrueckii*
744	*Limosilactobacillus fermentum*
745	*Lactiplantibacillus plantarum*

746	*Streptococcus thermophilus*
751	*Streptococcus thermophilus*
773	*Lactobacillus johnsonii*
790	*Lactiplantibacillus pentosus*
791	*Limosilactobacillus reuteri*
792	*Lactiplantibacillus plantarum*
793	*Lactiplantibacillus plantarum*
794	*Lactobacillus delbrueckii bulgaricus*
795	*Latilactobacillus sakei*
796	*Lacticaseibacillus rhamnosus*
797	*Limosilactobacillus fermentum*
798	*Aspergillus oryzae*
799	*Salmonella typhi*
801	*Streptococcus thermophilus*
802	*Streptococcus thermophilus*
803	*Streptococcus thermophilus*

Other Repository Deposits

Introduction

Recognizing the crucial role of microbial cultures in scientific advancement and education, researchers within India who procure cultures from other collection centers submit them to the NCDC with proper consent or permission obtained from the concerned repositories. This facilitates the supply of these cultures to other researchers and for educational purposes. This service caters specifically to researchers, institutes, and organizations seeking to deposit microbial cultures originally sourced from external repositories. These deposits are exclusively designated for research and educational purposes, underscoring the collaborative ethos within the scientific community regarding the sharing of valuable biological resources. Depositors wishing to contribute cultures to this category must adhere to a rigorous process to ensure compliance with legal and ethical standards. Initially, depositors are required to furnish detailed information about the microbial cultures they intend to deposit, encompassing aspects such as origin, characteristics, and previous repository affiliations. Crucially, securing necessary permissions from the original repository for the material's transfer to NCDC is imperative. This may involve notifying the external repository of the intended submission to NCDC and obtaining explicit consent for redistribution under specified terms. Written consent plays a pivotal role in the submission process, requiring depositors to formally declare their agreement to make the deposited material available solely for research and educational purposes.

The scope of "Cultures from Other Repository Deposits" extends both nationally and internationally, encompassing cultures and materials sourced from collection centers worldwide. This broad inclusion criterion enables NCDC to curate a diverse and extensive collection of microbial cultures, thereby enriching the resource pool accessible to researchers and educators alike. Adherence to procedural formalities is essential for submission to this category, with a mandatory requirement for deposit forms. These forms capture vital information about the culture, including its origin, characteristics, and depositor details. Serving as formal records of the deposit, they affirm the depositor's compliance with NCDC's terms for submission and distribution.

Catalogue of Cultures - Other Repository Deposit

Acinetobacter calcoaceticus

(Beijerinck 1911) Baumann et al. 1968

212 NCDO 709, NCIMb 8208, NRRL B-551, ATCC 23220 (Achromobacter lacticum) Causes slimy milk, Nutrient Agar, BHI, 30°C

Bacillus cereus

Frankland and Frankland 1887

66 N.R. Smith, US Dept, Agric ATCC 10876, NCDO721, NCIB 8579, 1256, NRRL B-569, Produces penicillinase, Nutrient Agar, 30°C

205 DSMZ4312, deposited by Dr. Gautam Kaul, cereus selective agar, Nutrient, BHI, 28-37°C, 10-12h

240 MTCC 1272, DSM 2301, CBCC 2823, Enterotoxigenic strain Can. j. Microbiol. 26:753 (1980), Nutrient Agar, 30°C

Bacillus polymyxa

(Prazmowski 1880) Mace 1889

68 CDO 731, ATCC 10401, NCIMB 809, Produces polymyxin Journal of Bacteriology 54 (5): 549-556 (1947) Nutrient Agar, 30°C

Geobacillus stearothermophilus

Donk 1920

69 NIZO C953, NCDO 1780, DSM 1550, NCIMB 11780, From Evaporated milk, Detection of Penicillin and other inhibitory substances in milk, Nutrient broth +0.1% starch, 55°C

206 NCDO 733, ATCC 7953, NCTC 10007, NCIB 8157 **Type strain**, Isolated by N.R. Smith (USDA) T17 From unprocessed canned food, Nutrient broth +0.1% starch,55°

326 MTCC 37, Aerobic 55°C, Nutrient agar/broth, 48h

327 MTCC 38, Aerobic 55°C, Nutrient agar/broth, 48h

Bacillus subtilis

71 ATCC 6633, NCDO 1733, DSM 347, NCIMB 8054, NCTC 10400, Production of subtilin , Bioassay of aueromycin, streptomycin, Dihydro streptomycin, vancomycin for Factor A content, viomycin sulphate, Kanamycin B and novobiocin. Sterility assay. Arch. Biochem. 4 (3):297-309(1949) Antibiotics and Chemotherapy 9 (10); 614 (1959) Fed. Reg.27 (251); 13033(1962) Ibid 28(76); 3832(1963) 9-14 Ibid28 (76); 3833(1963) Appl. Microbiol.19 573-579 (1970) Nutrient Agar, 37°C

215 NCDO 736, NCIB 8057, ATCC 9524, NRRL B-314, Assay of Penicillin, streptomycin, Streptothricin, Nutrient Agar, 30°C

216 NCDO 737, NCIB 8159, ATCC 9466, NRRL B -558, Assay of penicillin and streptomycin, J. Bacterol. 49; 411(1945) Science 101; 365(1945), Nutrient Agar, 30°C

Enterococcus faecium

12 ATCC 51299

Enterococcus faecalis

91 NCBI Accession No. PP920493, C-10, UD 708, (*Streptococcus lactis*) J.Naylor, CSIRO Melbourne, Aus

114 NDRI strain S30, Litmus milk, 37°C

115 NDRI strain 253, Litmus milk, 37°C

116 ATCC 8043, Assay of folic acid, pyridoxal, Pyridoxamine and arginine. Methods of analysis of Official, Agriculture Chemists, 9th edition, page 666(1960), Methods of Vitamin Assay, Edited by the Assoc.Vitamin Chemists, Inc. Interscience Publishers (1966) pp 227-234, Liver Extract Agar, 30°C

123 NCDO 581, NCTC775, ATCC 19433, DSM20478, Type strain serological group D, Yeast Glucose broth (N broth+0.05% Glucose+0.3% yeast extract)

203 NCDO 538, ATCC 27332, NCIB 8256, NCTC 817, Isolated by P.M.F. Shattock, NIRD, 1940, Isolated from milk (*Streptococcus liquifaciens*), Skim milk,YD broth,37°C

223 NCDO 581, ATCC 19433, DSM 20478, NCIB 775, Type strain, Nutrient Agar, 37°C

Enterococcus faecium
(Orla Jensen 1919)
Schleifer and Kilpper-Balz 1984

90 NCBI Acc. No. PP935426, United Dairies, London 1954, from cheese starter, YDB/Litmus milk, 30°C

124 SD1, NCDO 502 (*Streptococcus durans*) J. Czulak, CSIRO, Australia, 1955 Isolated from dried milk power Starter culture for short cheese making process % G+C 38.0 Aust. Dairy Review 22:18 (1954), Litmus milk,37°C

200 NCDO 532, Isolated by T.Giboson, 1948, Edinburgh (*Streptococcus kefir*) MRS broth, 30°C

211 NCDO 942, ATCC 19434, DSM 20477, NCTC 2171, Type strain Serological group D (Grumbach serotype % G+C 38.3 Nutrient Agar, BHA, 37°C

Escherichia coli

(Migula 1895) Castellani and Chalmers1919

134 NCDO 745, NCIMB 8277, NCTC 8196 Type1, Disinfectant strain used in Expt. 52 in Source Book of Experiments in Teaching of Microbiology, Eds. S.B. Primrose And A.C. Wardlaw, Academic Press. 1982. Nutrient Agar, 30°C

135 NCTC 10538 strain K-12, ATCC 14948, NCIMB 10083, NCDO 1984, From human faeces Reference strain for DNA base Composition. Nutrient Agar, 37°C

249 MTCC 119, NCIBM 9483,NCTC 10537, Hfr strain, Iysogenic for phage Hfr Derived from strain, K 12 F + Classical high frequency chromosomal donor, On conjugation, Nutrient Agar,37°C

Lactobacillus acidophilus

14 NCIMB 1899, NCDO 2, ATCC 11975 J. Am. Med. Assoc. **79**: 609 (1922) Ibid 80: 602 (1923) MRS/Litmus milk, 37°C

15 Russian strain, Litmus milk, 37°C

16 Chr. Hansen Lab. Denmark, MRS/Litmus milk, 37°C

686 DSMZ 20079, ATCC 4356, MRS broth+ 0.05%, cysteine hydrochloride, 37°C (anaerobic), pH 6.5 (at 25ºC), 24-48 h

Secundilactobacillus collinoides

Carr and Davies 1972

2 NCDO 454, NCIMB 8033, NCTC 4955, ATCC 8291. (*Lactobacillus*

brevis) Isolated from beer. MRS / Litmus milk, 30°C

Lactobacillus delbrueckii ssp. bulgaricus

(Orla-Jensen1919)Weiss et al.1984

9 NCIM 2358, Litmus milk, 37°C

253 NCDO 1489, ATCC 11842, DSM 20081, **Type strain** of Lb.bulgaricus from Bulgarian yoghurt, MRS/Skim milk/YGLB, 37°C

277 NCDO 2483, B9, 3502, Gal Papain digest broth, 37°C

285 NCDO 2772, Produce slime, MRS, 37°C

304 NCIMB 702395, NCDO 2395, Isolated from commercial yoghurt YGLPB, 37°C

308 NCIMB 701006, NCDO 1006, YGLPB, 37°C

Lactobacillus delbrueckii ssp. lactis

Orla-Jwnsen 1919, Weiss et al. 1984

283 NCDO 2458, L-25, C-58, MRS, 37°C

Limosilactobacillus fermentum

Beijerinck 1901

141 NCIMB 2797, NCTC 2797, NCDO 394, Isolated from intestine of 8-day old breast- fed baby,MRS/Litmus milk,37°C

156 NCDO215, ATCC9338, NCIMB 6991, DSM20391, NCIMB 8028, Assay of Thiamine, Alanine & Histidine, MRS, 37°C, J. Biol.chem 64:743 (1925), J.Biol. chem155:153 (1944)

214 NCDO 215, NCIMB 6991, ATCC 9338, DSM 20391, Litmus milk/MRS Broth, 37°C

Lactobacillus helveticus

(Orla-Jensen 1919) Bergey's et al. 1934

5 ATCC 8018, NCIMB 8025, NCDO 262, Litmus milk, 37°C

6 NCDO 103, ATCC 8001, NCIMB 8115, MRS/Litmus milk, 37°C

288 NCDO 2712, DSM 20075 Type strain, MRS, 37°

Lactiplantibacillus plantarum

(Orla- Jensen 1919) Bergey's et al.1934

221 NCDO 340, NCIB 6105, Isolated from sailage, MRS, 30°C

Lacticaseibacillus rhamnosus

Hensen 1968, Collins et al. 1989

18 ATCC 7469, NCIMB 8018, NCTC 6375, NCDO 243, Assay of pantothenic acid, nicotinic acid, glutamic acid, Pyridoxal, Arginine, riboflavin, Can. J. Microbiol. 11(@):319-324 (1965), Methods of Vitamin assay, Augustion, J. Klein, B.P. Becker, D. and Venugopal, P.B. (Eds.),John Wiely and Sons (1965), pp. 365-383. MRS/Litmus milk, 30°C

24 ATCC 8014, NCDO 82, NCIMB 6376, Assay of arginine, biotin, methionine, niacin, pantothenic acid, p-aminobenzoic acid and tryptophan. Phage host J. Biol. Chem.139:675(1941) ibid 150:305 (1943) Appl. Microbiol. 20:641-642 (1970) Source Book of Experiments for the Teaching of Microbiology, S.B. Primros And A.C. Wardlaw (Eds.), Academic Press (1982), Expt. No.32 and 37. Liver Extract Agar, 30°C

296 MTCC 1408, MRS agar/broth, skims milkagar, 37°C, 12-24h

353 MTCC 1408, handigarh

Lactococcus lactis ssp.cremoris

Orla-Jensen 1919, Schleifer e al.1985

81 J. Naylor, CSIRO, Melbourne, Australia 1955, C3, NCDO 506, UD 874 (*Streptococcus cremoris*) Cheese starter, YDB/Litmus milk, 22°C

82 L. E. Pearce, NZDRI 1972, R6, NCDO 764, NCDO 2002, (*Streptococcus cremoris*), Cheese starter, YDB/Litmus milk, 22°C

83 Hensen's strain, Litmus milk, 22°C

84 NCDO 924, CCM 2106 (*Streptococcus cremoris*), R. J. Mac Walter, United Dairies, London1954, Cheese starter, YDB/Litmus milk, 22°C

85 IP5, ATCC 14365, NCDO 495 (*Streptococcus cremoris*) A. Hirsch, NIRD 1950, Assay of Nisin, J. Gen. Microbiol. 4:70 (1950), YDB /Litmus milk, 22°C

86 C1, UD 806, NCDO 504 (*Streptococcus cremoris*) J. Naylor, CSIRO, Melbourne, Australia 1955, originally from United Dairies, London (*Lactobacillus plantarum* YDB /Litmus milk, 22°C

87 CSIRO C7 (*Streptococcus cremoris*) YDB/Litmus milk, 22°C

282 NCDO 1986 AM 2, Improve Cheddar cheese flavor by Production of methyl ketones Litmus milk/YDB, 22°C

306 NCBI Acc. No. PP935427, NCIMB 700499, NCDO 499, Cheese starter culture, Slow in winter milk. YGLPB, 22°C

309 NCBI Acc. No. PP935393, NCDO 506, C3, UD 874, Cheese starter culture, YGLPB, 22°C

310 NCIMB 8662, NCDO 607, ATCC 19257, DSM 20069, Type strain, YGLPB, 22°C

Lactococcus lacits ssp. diacetylactis

60 J. Czulak, CSIRO Melbourne, Australia 1957, (*Streptococcus lactis ssp. diacetylactis*), DRC-1, ATCC 13675, NCDO 1007, Cit+,Produces diacetyl in milk, YDB/Litmus milk, 30°C

61 J. Czulak, CSIRIO Melbourne, Australia 1957, (*Streptococcus lactis ssp. diacetylactis*) DRC-2, NCDO 1008, Cit+, Produces diacetl in milk, YDB/Litmus milk, 30°C

62 J. Czulak, CSIRIO Melbourne, Australia 1957(*Streptococcus lactis ssp. diacetylactis*), DRC-3, Cit+, Produces diacetyl in milk, YDB/Litmus milk, 30°C

64 Hansen's Strain, (*Streptococcus lactis ssp. diacetylactis*) Cit+, Produces diacetyl in milk, YDB/Litmus milk, 30°C

621 Helix-3-1384, NRCLA, YGB, 0.75% agar sol, 30°C, 24-48h

Lactococcus lactis ssp.lactis

Lister, 1873, Schliefer et al. 1985

94 A. Hiirsch NIRD, 1950 (*Streptococcus lactis*), NCDO 496, Production of Nisin in milk. J. Dairy Res. 18:198 (1951), YDB/Litmus milk, 30°C

96 ML8, NCDO 1944, NCDO 201 (*Streptococcus lactis*) L. E. Pearce, NZDRI, 1972, Dairy Sci. Abstr.33:411-416 (1971) YDB/Litmus milk, 30°C

97 NZDRI ML3, CSIRO 105, NCDO 763 (*Streptococcus lactis*) YDB/Litmus milk, 30°C

129 Hansen'strain, YDB/Litmus milk, 30°C

239 Wiesby Lab, Strain 7-14 (*Streptococcus lactis*), YDB/Litmus milk, 30°C

242 Wiesby Lab, Strain 2-10 (*Streptococcus lactis*), Phage host (P-791) YDB/Litmus milk, 22°C

243 Wiesby Lab, Strain 4-7 (*Streptococcus lactis*), Phage host (P-912) YDB/Litmus milk, 22°C

244 Wiesby Lab, Strain 4-1 (*Streptococcus lactis*), Phage host (P-913) YDB/Litmus milk, 22°C

245 Wiesby Lab, Strain 6-7 (*Streptococcus lactis*) Phage host (P-941, P-942) YDB/Litmus milk, 22°C

246 Wiesby Lab, Strain 4-9 (*Streptococcus lactis*) Phage host (P-946) YDB/Litmus milk, 22°C

274 NCBI Acc. No. PP935419, NCDO 607, ATCC 19257, NCIB 8662, DSM 20069, Type strain, YDB/M17, 22°C

278 NCDO 604, NCIB 6681, ATCC 19435, NCTC 6681, DSM 20481, CCM 1877, Type strain, YDB/M-17, 22°C

284 NCBI Acc. No. PP935420, NCDO 2042, Phage resistant, Litmus milk, YDB 22°C

289 NCDO 176, Type strain of *S. diacetylactis* and *S. lactis ssp.diacetylactis*, YDB/Litmus milk, 30°C

313 NCIMB 700176, Same as NCDO 176 Type strain of *S.diacetylactis* and *S. lactis ssp.diacetylactis*, YDB/Litmus milk, 30°C

314 NCDO 275, NCIMB 700275, Cheese starter cultureYDB/Litmus milk, 30°C

Leuconostoc mesenteroides ssp. cremoris

Knudsen and Sorenson 1929, Garvie 1983

29 DSM 20346, NIRD 1955LF2, CCM 2078, NCDO 543, NCIMB 12008, ATCC 19254, Isolated from dried cheese starter powder. Type strain, Int. J. Syst. Bacteriol.16:70-71 (1966), MRS broth, 25°C

Leuconostoc mesenteroides ssp. dextranicum

Beryerinck 1912, Garvie 1983

23 NCDO 518, ATCC 358, YDB, 30°C

30 NCDO 529, DSM 20484, CCM 2086, NCIMB 12007, ATCC 19255 Type strain Xylose negative, Int. J.Syst. Bacteriol.16:70-71(1966), MRS broth, 30°C

32 NCDO 516, NCIMB 8029, ATCC 8082, Int. J. Syst. Bacteriol. 19:287 (1969) J. Dairy Res. 27:291, MRS broth, 30°C

34 NCDO 551, NCIMB 8029, NCTC 3354, ATCC 8086, Isolated from fermenting string beans, produces dextran, J. Dairy Res. 27:291 (1960), MRS broth, 30°C

143 NCDO 530, MRS broth, 30°C

Leuconostoc mesenteroides ssp. mesenteroides

Tsenkovski 1878, van Tieghem 1878

31 NCL strain P-6, YD broth, 30°C

187 NCDO 518, NCIB 8013, ATCC 8358, YDB/MRS broth, 22°C

207 NCDO 523, NCB 8023, ATCC 8293, DSM 20343, Isolated by R.H. Vaughin, University of California, 1941, Type strain, Class C dextran producer, MRS, YDB, 25°C

219 NCDO 519, NCIB 8015, ATCC 8359 (*Leuconostoc dextranicum*), Class C dextran producer, MRS broth, 25°C

Micrococcus luteus

112 CRI, Kashauli, Nutrient Agar, 37°C

Propionibacterium freudenreichii ssp. Shermanii

Van Niel 1928, Holdeman and Moore 1970

139 NCDO 566, NCIMB 5964, NCTC 5964, CCM 121, ATCC 486, Swiss cheese, YD broth, 30°C

594 DSM 20270, Yeast extract lactate agar, 30°C, 48h

Propionibacterium freudenreichii ssp. freudenreichii

593 DSM 20271, ATCC 6207, CCM 1857, NCDO 564, NCIB 5959, Propionibacteria agar, 30°C, pH 7.0-7.2, 36-48h

Propionibacterium jensenii

595 DSM 20279, ATCC 4870, NCIB 5962, Yeast extract lactate agar, 30°C, 48h

Propionibacterium acidipropionici

596 DSM 20272, ATCC 4875, NCDO 570, NCIB 8070, Yeast extract lactate agar, 30°C, 48h

Propionibacterium theonii ssp. theonii

592 DSM 20277, ATCC 4872, NCDO 854, NCIB 8072, Propionibacteria agar, 30°C, Ph7.0-7.2, 36-48h

Proteus vulgaris

Hauser 1885

259 MTCC 426, ATCC 6380, Nonmotile, Nutrient Agar, 37°C

Pseudomonas fluorescence

31 MTCC 103, NCIB 9046, ATCC 13525, CCEB 546, DSM 50090, Isolated from prefilter tank, Utilization of 1-butalonol, 2-proponal and methanol, Int. J. Syst. Bacteriol. 20:18: (1970) J. Gen. Microbiology: 21:259 (1959), Nutrient Agar, 25°C

316 MTCC No. 103, NCIB 9046, ATCC 13525, CCEB546, DSM50090, isolated from prefilter tanks, type strain, utilization of 1-butanol, 2 propanol and methanol, Nutrient agar, 25°C, Int.J. syst. Bacteriol 20:18 (1970), J. gen microbiology 21:259 (1959)

Pseudomonas fragi

(Eichholz 1902) Gruber 1905

104 NCDO 752, NCIMB 8543, ATCC 4973, NCTC 10689, NRRL B-25, Type strain, J. Gen. Microbiol.25:400 (1961) Nutrient Agar, 25°C

Serratia marcescens

Bizio 1823

108 NCL, Nutrient Agar, 37°C

Staphylococcus aureus

Rosenbach 1884

237 MTCC 740, NCTC 6571, ATCC 9144, NCIMB 6571, NRR L B 314, Standard strain for antibiotic sensitivity test (Stoke'method) J. Biochem. 38:61 (1941), Nutrient Agar, 37°C

Streptococcus agalactiae

Lehmann and Neumann 1896

208 NCDO 865, NCIB 8778, ATCC 14364, ATCC 14928, Assay of Nisin and Penicillin, J. Gen. Microbiol. 4:71(1950), Nature 167:448 (1951), YD broth, Glucose broth buffered, 37°C

Streptococcus thermophilus

(Orla- Jenson 1919) Farrpw and Collins1984

38 NCL strain, YD broth, 30°C

74 Hansen's strain, Yoghurt, Litmus milk, 37°C

80 University of Wisconsin, Litmus milk, 37°C

158 Italian strain, Litmus milk, 37°C

177 NCDO 489, DSM 20479, NCIB 8779, Assay of penicillin in milk, Litmus milk, 37°C

217 NCDO 1469 (*S. salivarius ssp. thermophilus*) From Bulgarian yoghurt, Skim milk, 37°C

218 NCDO 1409, (*S. salivarius ssp. thermophilus*), Assay of penicillin, Skim milk, 37°C

303 NCDO 821, Isolated from German Yoghurt, Skim milk, 37°C

311 NCDO 2075, NCIMB 702075, NCDO 2393, Yoghurt culture, YGLPB, 22

312 NCDO 1968, NCIMB 701968, Bulgarian cheese starter, YGLPB, 22°

FUNGAL CULTURE

Aspergillus niger

224 MTCC 514, ATCC 10581, DSM 2182, NRRI 2295, Assay of Magnesium, Molybdenum, Copper, Zinc. Used for measuring Copper deficiency in soil, Ann. Ferm, 4:513 (1938) Science, 26:125 (1951) J. sci. Ind. Res.14:4 (1941) J. Pharma Sci. 72: 733 (1983) PDA, 25°C

Aspergillus parasiticus

53 NRRl 2999, PDA, 25°C

54 NRRl 3240, PDA, 25°C

Aspergillus oryzae

302 MTCC 1122, Isolated from soil and deposited by R.K. Jain, Czapek's Agar, 30°C

Penicillium camemberti

56 MTCC 418, ATCC 4845, NCTC 582, NRRL 877, From French Camembert cheese, PDA, 25°C

Candida butyric

280 ATCC 58433, MTCC 1907, IFO 1571, JCM 1501, Type strain, YEPD, 25°C

Candida cylindracea

286 ATCC 14830, DSM 2031, MTCC 908, CBS 6330, Production of lipase, YEPD, 25°C

Candida guillermondi

44 NCIM 1744, PDA, 25°C

Candida parapsilosis

279 MTCC 1744, Nutrient Agar + 1% glucose, 25°C

Rhodotorula glutinis

51 NCTC 389, PDA, 25°C

Rhizopus microspores

775 ATCC 52807, CBS 631.82, type strain 631.82, PDA, 25°C, 7 days

Kluyveromyces lactis

257 MTCC 458, NCYC 416, IFO 1090, CBS 683, NRRL Y-3279, Isolated from Gassy cheese, Type strain, Malt Yeast Extract Agar, 30°C

Kluyveromyces marxianus

39 NRLL 3224, *Sacchromyces fragilis*, PDA, 25°C

46 NRRL 3217, *Saccharomyces fragilis*, PDA, 25°C

623 MTCC4059, ATCC46537, 25°C, 48 h, deposited by Dr. Shilpa Vij, production of extracellular, polyphosphates, production of ethanol from whey upto 12%

646 MTCC4139, 25°C, 48 h, Thermotolerant, osmotolerant

647 MTCC 242, Milk Sample from cow, 25°C, 48 h, Thermotolerant up to 46°C

648 MTCC188, 25°C, 48 h

650 MTCC4136, 25°C, 48 h, pH 6.2, Thermotolerant, osmotolerant, ethanol tolerant

Mucormicrosporus namyslowski

774 MTCC 10574, GUFCC5392, isolated by Coriandrum sativum, Panji, Goa, PDA, 25°C, 7 days, aerobic

Saccharomyces cerevisiae

47 NCIM 3190, Baker's yeast, PDA, 25°C

49 NCIM 3273, ATCC 7752, NCYC 81, NRRl Y-973, Assay of Vitamin B6, PDA, 25°C

186 Strain SCWC, Shaw Wallace, Calcutta Distillery strain, PDA, 25 C °

189 Italian strain, SC-1, PDA, 25°C

622 MTCC170, 30 C °, 48 h, deposited by Dr. Shilpa Vij, production of ethanol, distillery yest, assay of hystatin

Saccharomyces uvarum

48 ATCC 9080, Assay of pantothenic acid, pyridoxal, Inositol, biotin, Puridoxamine and pyridoxine, Appl. Microbiol. 14: 462 (1966), PDA, 25°C

Torulopsis candida

43 NCTC389, PDA, 25°C

188 NRRL3234, PDA, 25°C

CHEESE STARTERS

147 Hansen's Cheese starter, CH-3, Skim Milk, 25°C

148 ATCC 14872, Chas. Pfizer Co. FD-20112, Lactic acid starter, Skim Milk, 25°C

149 ATCC 14875, Chas. Pfizer Co. FD-20115, Lactic acid starter, Skim Milk, 25°C

150 Chr. Hansen's Laboratories, Denmark, Skim milk, 25°C

151 Marshall Dairies HAZ, Skim Milk, 25°C

168 Wiesby Labs. GG-1 for Gouda Cheese, Skim Milk, 25°C

172 Wiesby Labs, Skim Milk, Skim Milk, 25°C

192 Chr. Hansen's Lab., Denmark, Skim Milk, 25°C

197 Strain CH-6, Chr. Hansen's Lab, Denmark, Skim Milk, 25°C

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12	*Enterococcus faecium*
14	*Lactobacillus acidophilus*
15	*Lactobacillus acidophilus*
16	*Lactobacillus acidophilus*
18	*Lacticaseibacillus rhamnosus*
23	*Leuconostoc mesenteroides ssp. dextranicum*
24	*Lacticaseibacillus rhamnosus*
29	*Leuconostoc mesenteroides ssp. cremoris*
30	*Leuconostoc mesenteroides ssp. dextranicum*
31	*Leuconostoc mesenteroides ssp. mesenteroides*
32	*Leuconostoc mesenteroides ssp. dextranicum*
34	*Leuconostoc mesenteroides ssp. dextranicum*
38	*Streptococcus thermophilus*
39	*Kluyveromyces marxianus*
43	*Torulopsis candida*
44	*Candida guillermondi*
46	*Kluyveromyces marxianus*
47	*Saccharomyces cerevisiae*
48	*Saccharomyces uvarum*
49	*Saccharomyces cerevisiae*
51	*Rhodotorula glutinis*
53	*Aspergillus parasiticus*
56	*Penicillium camemberti*
60	*Lactococcus lactis ssp. diacetylactis*
61	*Lactococcus lactis ssp. diacetylactis*
62	*Lactococcus lactis ssp. diacetylactis*
64	*Lactococcus lactis ssp. diacetylactis*
66	*Bacillus cereus*
68	*Bacillus polymyxa*
69	*Geobacillus stearothermophilus*
71	*Bacillus subitis*
74	*Streptococcus thermophilus*
80	*Streptococcus thermophilus*
81	*Lactococcus lactis ssp. cremoris*
82	*Lactococcus lactis ssp. cremoris*
83	*Lactococcus lactis ssp. cremoris*
84	*Lactococcus lactis ssp. cremoris*
85	*Lactococcus lactis ssp. cremoris*
86	*Lactococcus lactis ssp. cremoris*
87	*Lactococcus lactis ssp. cremoris*
90	*Enterococcus faecium*
91	*Enterococcus faecalis*
94	*Lactococcus lactis ssp. diacetylactis*
96	*Lactococcus lactis ssp. diacetylactis*
97	*Lactococcus lactis ssp. diacetylactis*
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104	*Pseudomonas fragi*
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112	*Micrococcus luteus*
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216	*Bacillus subitis*
217	*Streptococcus thermophilus*
218	*Streptococcus thermophilus*
219	*Leuconostoc mesenteroides ssp. mesenteroides*
223	*Enterococcus faecalis*
224	*Aspergillus niger*
237	*Staphylococcus aureus*
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240	*Bacillus cereus*
242	*Lactococcus lactis ssp. diacetylactis*
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259	*Proteus vulgaris*
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277	*Lactobacillus delbrueckii ssp. bulgaricus*
278	*Lactococcus lactis ssp. diacetylactis*
279	*Candida parapsilosis*
280	*Candida butyri*
281	*Lactobacillus delbrueckii ssp. bulgaricus*
282	*Lactococcus lactis ssp. cremoris*
284	*Lactococcus lactis ssp. lactis*
285	*Lactobacillus delbrueckii ssp. bulgaricus*
286	*Candida cylindracea*
288	*Lactobacillus helveticus*
289	*Lactococcus lactis ssp. diacetylactis*
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308	*Lactobacillus delbrueckii ssp. bulgaricus*
309	*Lactococcus lactis ssp. cremoris*
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311	*Streptococcus thermophilus*
312	*Streptococcus thermophilus*
313	*Lactococcus lactis ssp. diacetylactis*
314	*Lactococcus lactis ssp. diacetylactis*
316	*Pseudomonas fluorescence*
326	*Geobacillus stearothermophilus*
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593	*Propinibacterium freudenreichii ssp. freudenreichii*
595	*Propinibacterium jensenii*
596	*Propinibacterium acidipropionici*
622	*Saccharomyces cerevisae*
623	*Kluyveromyces marxianus*
646	*Kluyveromyces marxianus*
647	*Kluyveromyces Marxianus*
648	*Kluyveromyces Marxianus*
650	*Kluyveromyces Marxianus*
686	*Lactobacillus acidophilus*
713	*Limosilactobacillus fermentum*
774	*Mucormicrosporus namyslowski*
775	*Rhizopus microspores*

Safe Deposit

Introduction

The "Safe Deposit" service offered by the NCDC provides researchers and organizations with a secure and confidential means of preserving microbial cultures for a designated period. In this category, microbial cultures are deposited with NCDC for a period of five years, during which strict confidentiality measures are upheld, and the cultures are kept under secure conditions. Unlike other deposit categories, the depositor in the Safe Deposit category does not grant NCDC any material distribution rights. Instead, NCDC acts solely as a custodian, ensuring the safekeeping and confidentiality of the deposited cultures. Depositors submit their microbial culture stocks to NCDC, which then prepares freeze-dried ampoules of the cultures. Two ampoules are provided to the depositor for cross-checking, ensuring that the submitted culture matches the original submission. Upon confirmation of the culture's identity, NCDC assumes responsibility for maintaining the microbial culture for the agreed-upon five-year period. To continue the safe deposit beyond this timeframe, depositors are required to submit a form along with applicable fees. Failure to express interest in continuing the safe deposit arrangement results in NCDC relinquishing responsibility for maintaining the culture in safe deposit. Access to cultures deposited under the Safe Deposit category is restricted solely to the depositor, who can request access from NCDC with valid justification. This ensures that the deposited cultures remain confidential and are accessible only to authorized individuals for specific research or educational purposes. An integral part of the Safe Deposit process involves signing an agreement between the depositor and NCDC. This agreement outlines the terms and conditions of the safe deposit arrangement, including confidentiality measures, access protocols, and responsibilities of both parties. To initiate the safe deposit process, depositors are required to complete a deposit form, providing essential details about the microbial cultures being submitted. This form serves as a formal record of the deposit and ensures that all necessary information is captured for proper cataloging and management by NCDC (Annexure-1).

Catalogue of Cultures- Safe Deposit

Bifidobacterium breve

269 ATCC15700, deposited by Nancy awasthi, MRS+ L-Cysteine 0.005% hydrochloride, 37°C, pH 6.0, 24-48 h

Lactiplantibacillus argentoratensis

784 NCBI Accession no. OR856055, RSB 7, Source of isolation silage (maize), Karnal, deposited by Rashika Srivastava, MRS Broth, 37°C, pH 6.0, 24 h

Levilactobacillus brevis

778 RSB1, Source of isolation silage (maize), Ludhiana, deposited by Rashika Srivastava, MRS Broth, 37°C, pH 6.0, 24 h

Lactobacillus delbrueckii ssp. bulgaricus

(Orla-Jensen 1919)Weiss *etal.* 1984

761 HH9, Curd, deposited by Dr. Pradip Behare, Kanchan Munjal, MRS broth, 42°C, EPS Producing

762 Nsp12, Curd, deposited by Dr. Pradip Behare, Kanchan Munjal, MRS broth, 42°C, EPS Producing

800 Ind15, Curd, deposited by Dr. Pradip Behare, Kanchan Munjal, MRSbroth, 37°C, EPS Producing

764 ATCC 7830, MRS + 1% Glucose, 37°C, pH 6.5, 24h, indicator of Vitamin B12 Assay

Lacticaseibacillus casei

782 NCBI Accession no. OR856053, RSB5, Source of isolation silage (maize), Karnal, deposited by Rashika Srivastava, MRS Broth, 37°C, pH 6.0, 24 h

299 VT, Deposited by Vijendera Mishra, MRS/Litmus milk, 37°C, 337-240.

Limosilactobacillus fermentum

605 Accession No. ONO59593, RS-2, Raabadi, deposited by Sandip Basu, MRS broth, 37°C, pH-6.5, 16-18h

777 MTCC 5898, Source of Isolation Infant feces, deposited by Dr. Rajiv Kapila, MRS Broth/milk, 24h

783 NCBI Accession no. OR856054, RSB 6, Source of isolation silage (paddy), Karnal, deposited by Rashika Srivastava, MRS Broth, 37°C, pH 6.0, 24 h

785 NCBI Accession no. OR856056, RSB9, Source of isolation silage (maize), Rohila, deposited by Rashika Srivastava, MRS Broth, 37°C, pH 6.0, 24 h

789 NCBI Accession no. OR856060, RSB13, Source of isolation silage (maize), Karnal, deposited by Rashika Srivastava, MRS Broth, 37°C, pH 6.0, 24 h

Lactobacillus helveticus

(Orla-Jensen1919) Bergey's *etal*.1934

05 ATCC 8018, NCIMB 8025, NCDO 262, Litmus milk, 37°C

599 MTCC 5463, MRS, skim milk agar, 37°C, pH- 6.2, 12-24h

Lactobacillus johnsonii

781 NCBI Accession no. OR856052, RSB4, Source of isolation silage (paddy), NDRI, Karnal, deposited by Rashika Srivastava, MRS Broth, 37°C, pH 6.0, 24 h

Lactiplantibacillus pentosus

779 NCBI Accession no. OR856050, RSB2, Source of isolation silage

(maize), Ludhiana, deposited by Rashika Srivastava, MRS Broth, 37°C, pH 6.0, 24 h

780 NCBI Accession no. OR856051, RSB3, Source of isolation silage (maize), Indri, Karnal, deposited by Rashika Srivastava, MRS Broth, 37°C, pH 6.0, 24 h

Lactiplantibacillus plantarum

765 F5, Infant fecal, deposited by Manorama Kumari, MRS Broth, and 37 ºC, pH 6.5, 18h

786 NCBI Accession no. OR856057, RSB10, Source of isolation silage (maize), Delhi, deposited by Rashika Srivastava, MRS Broth, 37°C, pH 6.0, 24 h

787 NCBI Accession no. OR856058, RSB11, Source of isolation silage (maize), Punjab, deposited by Rashika Srivastava, MRS Broth, 37°C, pH 6.0, 24 h

788 NCBI Accession no. OR856059, RSB12, Source of isolation silage (maize), Geedh, deposited by Rashika Srivastava, MRS Broth, 37°C, pH 6.0, 24 h

Lacticaseibacillus rhamnosus

Hansen 1968, Collins *etal*. 1989

759 Kar1, deposited by Dr. Pradip Behare, Kanchan Munjal, MRS broth, 37°C, EPS Producing

760 Ram12, deposited by Dr. Pradip Behare, Kanchan Munjal, MRS broth, 42°C, EPS Producing

776 MTCC 5897, Source of Isolation house holding dahi, deposited by Dr. Rajeev Kapila, MRS Broth/Milk, 37°C, 18h

Limosilactobacillus reuteri

763 V7, NDRI, deposited by Dr. Pradip Behare, Manorma Kumari, MRS Broth, 37°C, 12-16h, Vitamin B12 Producing

748 NCBI No. MW074917, SW27, Faecal isolation, deposited by Dr. Sachin Kumar, MRS Broth, 37°C, 18-24h

Ligilactobacillus salivarius

747 NCBI No. OK271463, RBL22, Faecal isolation, deposited by Dr. Sachin Kumar, MRS Broth, 37°C, 18-24h

Streptococcus thermophilus

(Orla-Jenson1919)Farrow and Collins 1984

169 Kri2, Curd Sample, deposited by Dr. Pradip Behare, Kanchan Munjal, M-17, 37°C, EPS Producing

329 MD1, Isolated by mishti doi, Kolkata, deposited by Rashab Majumder, M-17 broth, 42°C, 4h

330 MD2, Isolated by mishti doi, Kolkata, deposited by Rashab Majumder M-17 broth, 42°C, 4h

334 NCBI accession number PP439709, MD3, deposited by mishti doi, Kolkata, Isolated by Rashab Majumder, M-17 broth, 42°C, 4h

754 Vis 1, Curd Sample, deposited by Dr. Pradip Behare, Kanchan Munjal, M-17, 37°C, EPS Producing

755 Vis2, Curd Sample, deposited by Dr. Pradip Behare, Kanchan Munjal, M-17, 37°C, EPS Producing

757 Ram1, Curd Sample, Dr. Pradip Behare, Kanchan Munjal, M-17, 37°C, pH 6.6, EPS Producing

767 Whw1, Curd Sample, Dr. Pradip Behare, Kanchan Munjal, M-17, 37°C, pH 6.6, EPS Producing

FUNGAL CULTURES

Kluyveromyces marxianus

769 MTCC 1389, EA-KM, deposited by Dr. Shilpa vij, Upma verma, YPD, Medium, 37°C, 24h, 12% ethanol adapted and ethanol production from lactose but not genetically modified.

770 MTCC 1389, LA-KM, deposited by Dr. Shilpa vij, Upma verma, YPD, Medium, 37°C, 24h, 20% Lactose adapted but not genetically modified.

771 6C17, deposited by Dr. Shilpa vij, Upma verma, YPD, Medium, 37°C, 24h, 12% ethanol adapted, but not genetically modified.

772 6C17, deposited by Dr. Shilpa vij, Upma verma,YPD, Medium, 37°C, 24h, 20% Lactose adapted but not genetically modified.

Numeric Index of Cultures in Safe Deposit

Accession No.	Organism
05	*Lactobacillus helveticus*
169	*Streptococcus thermophilus*
299	*Lacticaseibacillus casei*
329	*Streptococcus thermophilus*
330	*Streptococcus thermophilus*
334	*Streptococcus thermophilus*
599	*Lactobacillus helveticus*
605	*Limosilactobacillus fermentum*
747	*Ligilactobacillus salivarius*
748	*Limosillactobacillus reuteri*
754	*Streptococcus thermophilus*
755	*Streptococcus thermophilus*
757	*Streptococcus thermophilus*
759	*Lacticaseibacillus rhamnosus*
760	*Lacticaseibacillus rhamnosus*
761	*Lactobacillus delbrueckii* ssp. *bulgaricus*
762	*Lactobacillus delbrueckii* ssp. *bulgaricus*
763	*Limosilactobacillus reuteri*
764	*Lactobacillus delbrueckii* ssp. *bulgaricus*
765	*Lactiplantibacillus plantarum*
767	*Streptococcus thermophilus*
769	*Kluyveromyces marxianus*
770	*Kluyveromyces marxianus*
771	*Kluyveromyces marxianus*
772	*Kluyveromyces marxianus*
776	*Lacticaseibacillus rhamnosus*
777	*Limosilactobacillus fermentum*
778	*Levilactobacillus brevis*
779	*Lactiplantibacillus pentosus*
780	*Lactiplantibacillus pentosus*
781	*Lactobacillus johnsonii*
782	*Lacticaseibacillus casei*
783	*Limosilactobacillus fermentum*
784	*Lactiplantibacillus argentoratensis*
785	*Limosilactobacillus fermentum*
786	*Lactiplantibacillus plantarum*
787	*Lactiplantibacillus plantarum*
788	*Lactiplantibacillus plantarum*
789	*Limosilactobacillus fermentum*
800	*Lactobacillus delbrueckii* ssp. *bulgaricus*

Innovative Culture Deposit

Introduction

NCDC offers a distinct facility known as "Innovative Culture Deposits" to manage the dissemination of proprietary microbial cultures tied to specific technologies. This category facilitates access to these specialized cultures for entities purchasing the related technology, based on terms detailed in a Memorandum of Understanding (MOU). Access to microbial cultures under this program is limited to the technology's purchasers for the period specified in the MOU. Entities obtaining these cultures are mandated to sign a commercial distribution agreement with NCDC. This agreement specifies the terms of use, focusing on the commercial application of the cultures and excluding free distribution for research or educational purposes. This restriction ensures the protection of the commercial exclusivity and intellectual property associated with these innovative cultures. The agreement between NCDC and the depositor, including the distributor and the Authorized Signatory, formalizes the transfer of rights over the material. Submission of cultures to this category necessitates completing a mandatory deposit form (Annexure-1). This form is crucial for the proper documentation and management of the microbial cultures and the associated technologies. It acts as an official record of the submission, ensuring all pertinent details are accurately registered.

Limosilactobacillus fermentum

400 StrainV10, Isolated and submitted by Pradip V Behare, MRS, 37°°C, EPS producing Strain

Lactiplantibacillus plantarum

656 KF2B, Female feces, deposited by Hitesh, MRS, 37°C, pH 6.5, 18h

Lacticaseibacillus rhamnosus

10 NCBI Acc. No.OR777089, Cow milk, Deposited by Dr. Sachin Kumar, MRS, 37°C, pH 5.8-5.9, 24-48h

610 Accession No. ONO59592, RSI-3A, Raabadi,deposited by Sandip Basu, Dr. S.k. Tomar, MRS, 37°C, pH 6.5, 16-18h

Limosilactobacillus ruteri

766 F2, Infant fecal, deposited by Manorama Kumari, MRS Broth, 37°C, pH 6.5, 16 h, Vitamin B12 Producing

Pediococcus acidilactici

006 NCBI Acc. No. OR777096, cow milk, deposited by Dr. Sachin Kumar, MRS Broth, 37°C, pH 5.8-5.9, 24-48h

Streptococcus thermophilus

79 MC1, Curd Sample, deposited by Pradip V Behare, Kanchan Munjal, M-17, 37°C, EPS Producing

95 HH8, Raw Milk Sample, deposited by Pradip V Behare, Kanchan Munjal, M-17, 37°C, EPS Producing

352 NCBI accession no. PP437565, Deposited by Pradip Behare, Dr. Rameshwar Singh, Dahi Culture, Skim Milk, M-17, 42°C

399 NCBI Accession no. ON056021, Kri 2 Strain, Curd, deposited by Pradip V Behare, Kanchan Munjal, M-17 broth, 42°C, EPS Producing Strain,

401 IG16 strain, Isolated and deposited by Pradip V Behare, M-17 broth, 42°C, EPS producing strain

428 M-17 Broth, 42°C

436 UKD3 strain, Isolated from Dahi, Karnal, Isolated and deposited by T.Uma Maheshwari, M-17, 42°C, pH-6.5

439 UKD6 Strain, NCBI accession no. PP437588, Isolated from Dahi, Karnal, Isolated & deposited by T. Uma Maheshwari, M-17, 42°C, pH-6.5

768 AM1, Curd Sample, deposited by Pradip V Behare, Kanchan Munjal, M-17, 37°C, pH 6.6, 4h, EPS Producing

Weissella confuse

003 NCBI Acc. No. OR777090, Cow milk, deposited by Dr. Sachin Kumar, MRS Broth, 37°C, pH 5.8-5.9, 24-48h

Numeric Index of Cultures in Innovative Culture Deposits

Accession No.	Organism
003	*Weisella confusa*
006	*Pediococcus acidilactici*
10	*Lacticaseibacillus rhamnosus*
79	*Streptococcus thermophilus*
95	*Streptococcus thermophilus*
352	*Streptococcus thermophilus*
399	*Streptococcus thermophilus*
400	*Limosilactobacillus fermentum*
401	*Streptococcus thermophilus*
428	*Streptococcus thermophilus*
436	*Streptococcus thermophilus*
439	*Streptococcus thermophilus*
610	*Lacticaseibacillus rhamnosus*
656	*Lactiplantibacillus plantarum*
766	*Limosilactobacillus ruteri*
768	*Streptococcus thermophilus*

Annexure-1

Guidelines for Deposition of Cultures to NCDC

- All the correspondence regarding the deposition should be made by the research Supervisor/Scientist/Faculty/Head of the department. The queries and correspondences by the students/research scholars and other staff will not be entertained.
- The cultures should be sent only after prior approval from the Scientist In-charge of NCDC for the process. Cultures sent without confirmation from NCDC will not be accepted for deposition and will be discarded without intimation.
- We accept only cultures belonging to BSL-1 and BSL-2 level.
- The information such as proposed name (taxonomic identification till genus or species level) of the cultures, good quality sequences [ab1/text file of 16S rRNA gene sequence (around 1400 bp) in case of bacteria and D1 D2 domain of LSU of rDNA / ITS-5.8S rRNA in case of Fungus & Yeast), available phenotypic and genotypic data should be sent to the scientist In-charge of the specific department to take prior approval for the deposition.
- The decision regarding the feasibility of deposition of the cultures will be decided by In-Charge NCDC with Head D.M. Division, NDRI, Karnal depending upon the availability of similar strains at NCDC and/or if any appropriate (i.e. enzyme activity etc) factors.
- The culture data sheet for the deposition is available at NDRI website (https://www.ndri.res.in) as pdf files. After the confirmation from concerned scientist, duly filled data sheets (scanned with sign and seal of depositor) along with the culture (as given below) should be sent to the In-Charge NCDC, ICAR-NDRI, Karnal-132001
- The depositor and the Duly Authorized Signatory of the depositor's Institution, whichever represents the legal owner of the material, hereby gives NCDC ownership in their interest in the transferred quantity of material, with the right, including the right under any patent or patent application, should there be one, to reproduce, use, give or otherwise transfer material to third parties in any manner under General deposition.
- The NCDC cultures from other repository deposit will be available to universities or private sector for research purpose only.
- The NCDC cultures under safe deposit category will be deposited for five years after deposition of fee. After completion of five year, the depositor needs to pay safe deposition fees again to maintain the culture in the same category.The NCDC will ask for resubmission of culture to depositer by mail. As per their consent the culture will be resubmitted under same category or destroyed or shifted to general deposition category. Non reply of mail by the depositor will be considered as to shift it to general deposit category.
- The NCDC cultures under Innovativa Cultures category will be supplied to buyer of technology only as per clause of MOU with ICAR-NDRI, Karnal-132001
- Pure cultures should be sent in active form in duplicates in the form of agar plates/ slants /stabs.
- Packaging of the culture(s) should be done properly to avoid any physical damage during the transportation. Contact details of the In-charge NCDC for culture deposition are given below.

Dr. Pradip Behare
In-Charge NCDC
D.M. Division
ICAR-NDRI, Karnal-132001
Contact No. +91-184-2259198

Annexure-2

Deposit/Accession Form

National Collection of Dairy Cultures (NCDC)
Dairy Microbiology Division
ICAR-National Dairy Research Institute
Karnal-132001

For Official use only

B ☐ ☐ **Y** ☐ **M** ☐
Accession Date:

1. **Scientific of Organism:**
2. **Synonym:**
3. **Classification:**
   Order: **Family:**
4. **Is this the type strain of this organism?** **YES** ☐ **NO** ☐
5. **Other collections numbers:**
   If yes, please cite the reference:
6. **Origin of the strain (please give as much information as possible)**
   Source of isolation:

   Geographical area:

   Isolated by (date):

   Identified by (date):

   Culture Designation:

   If there is any literature in reference to the above items, please cite it (them):

---

7. **Method of Identification & Conformation:**
   (a) Morphological
   (b) Biochemical
   (c) *Genetic* (i) *16s rRNA* (ii) *Whole Genome* (iii) *Any other* ☐
   (d) Additional Features
8. **Particular Uses of the Strain:**
   Production of:
   Ref.:

Degradation of:
Control of:
Ref.:
Assay of:
Ref.:
New taxon:
Ref.:
Other:
Ref.:

9. Is the strain dangerous to health & environment?

(a) *Zoopathogenic* (b) *Phytopathogenic* (c) *Unknown* ☐

10. Safety information: Is this organism hazardous to:

Humans -- - ---------- - - - - -Animals -- -- - -------- - --- If yes, what is the recommended

Biosafety Level -- ---------- ----------

11. Maintenance and Preservation:

Medium (give formula, use additional sheet if necessary):

Temperature:----------pH----------Incubation time----------

12. Oxygen relationship:

(a) Aerophilic (b) *Microaerophilic* (c) *Facultative anaerobic* (d) *Anaerobic* ☐

Special Conditions:----------

13. Reason for deposition:

(a) *To obtain NCDC No.* ☐ (b) *Academic /Research Purpose* ☐
(c) *To Preserve & maintain* ☐ (d) *any unique character/ special features* ☐

14. The form of culture at the time of deposition

(a) *Liquid form* (b) *Agar/Slant/ Petri plate* (c) *Dried form* (d) *Any other* ☐

15. distribution rights & details about deposition Category:

(i) Depositor conveys ownership of the deposited material to NCDC as a general deposit

The depositor and the duly authorized signatory of the depositor's institution, whichever represents the legal owner of the material, hereby gives NCDC ownership in their interest in the transferred quantity of material, with the right, including the right under any patent or patent application, should there be one, to reproduce, use, give or otherwise transfer material to third parties in any manner.

(ii) Depositor conveys ownership of the deposited material to NCDC as an Innovative Culture/ Technology transfer

Material will require execution of an agreement for distribution for commercial purposes by recipient that incorporates or otherwise uses the material. The material will not be free for distribution for research & teaching. The distributor and the duly authorized signatory of the depositor's institution, whichever represents the legal owner of the material, hereby conveys to NCDC rights to the transferred quantity of material with the authority to reproduce, use, give or otherwise transfer material to third party. The terms of such transfer to third party will be negotiable between NCDC and depositor under the separate agreement.

(iii) Safe deposit

The depositor does not grant NCDC any material distribution rights. The material shall be maintained in the repository for which a five year fee will be levied for each organism deposited.

(iv) Other Repository Deposit

The material will be free for distribution for research & teaching and transfer to third party. This category deposits the culture/ material from national or international collection centre.

16. Name of depositor:

17. Address of depositor:

Phone/Mobile No.: Fax: Email:

18. Deposition category:

(a) *General deposit* (b) *Other repository deposit* (c) *Safe deposit* (d) *Innovative culture deposit* ☐

19. For Safe Deposition Category:

(a) Period for safe deposition of culture:
(b) Five year safe deposition fee for one culture: Rs. 2000/
(c) GST @ 12% on safe depotion fee for one culture: Rs. 240/-
(d) Total five year safe deposition fee for one culture: Rs. 2240/-
(e) No. of cultures for safe deposition:
(f) Safe deposition fee for cultures:
(g) GST @ 12% on safe deposition fee for cultures:
(h) Total safe deposition fee for - - - -- - - cultures:

I/We hereby authorize NCDC to accession the culture in its general deposit/other repository deposit/ safe deposit/ innovative culture deposit and to distribute it on request.

Depositor's Sign with Date

Sign with Seal Head of the Institute / In-charge of Depositor's/ H.O.D

20. FOR NCDC USE ONLY Remarks if any:

NCDC Accession Number:

Processed by: _____ Date: _____Signature:_____

Supervised by: ----------Date: ----------Signature: ----------

Entry in Database: Date _____By: _____

MATERIAL TRANSFER AGREEMENT
Between
National Collection of Dairy Cultures (NCDC)
ICAR-National Dairy Research Institute, Karnal

(A constituent of the Indian Council of Agricultural Research (ICAR), 1, Dr Rajendra Prasad Road, Krishi Bhawan, New Delhi– 110 001)

And

……

1. In reference to the request from Dr./Mr./Ms. , vide email dated, the NCDC, NDRI agrees to transfer _____ to _____
2. The use of the material is limited to **the research & teaching & commercial purpose (According to General Deposition and Other Repository Deposition category) at ----------**. Any deviations from the permitted use shall require a new prior informed consent/MTA with the NCDC, NDRI. The agreement also applies to variations of the material. Place of performance will be the registered office of the sending institute. The beneficiary will bear the shipping risk and cost. The beneficiary acquires ownership of the material after delivery.
3. The beneficiary agrees to use the material **in compliance with all applicable laws and ordinances, as well as any other applicable regulations and safety rules**. The beneficiary ensures that it obtains all necessary authorization from the regulatory authorities and will submit it on request. Transfer of the material or parts or variations thereof is permitted only if agreed upon in a separate agreement.
4. The NCDC, NDRI shall not be liable for the fitness for use or for certain features of the material. In addition, the NCDC, NDRI will not be liable if any, harm due to use of the material. during transfer and handling will be responsibility of receiving party. Therefore, the beneficiary is obliged to observe and to comply with any information or measure of conduct amended in the annex to this agreement. Especially, the receiving party will not misuse the biological material/ culture. And shall be used for intended purpose. The NCDC, NDRI declares that it is not aware of rights of third parties that would limit the right to work with the material for the said purposes. The beneficiary agrees to keep strictly confidential all information marked as confidential, even after expiration of the contract, and especially not to pass the information/material on to third parties.
5. The beneficiary grants the NCDC, NDRI the right of use of results for research purposes. This shall also include the right to use the results in research and development cooperation. All descriptions of the original material in the declarations require the prior written consent of NCDC, NDRI. Otherwise reference shall be made that the material was provided by NCDC, NDRI.
6. This agreement shall be governed by Indian law. Place of jurisdiction shall be the Delhi High Court. The directors of both parties shall 76ndeavour to settle any dispute amicably before referring it to a court of law. In the event of any dispute or difference related to the interpretation and application of the provisions of this agreement, such dispute or difference shall be referred to by either party to the arbitration. The arbitrator will be appointed by the Director General (ICAR).

7. Both contracting parties, NCDC, NDRI and ----------, shall be obliged to comply with the MTA.
8. The agreement will remain in force till the transferred material shall be used for the intended purpose mentioned at Sl No. 2 above.

[*Monetary benefits may include anyone or more than one of the following; (i) Fees, (ii) Up-front payment, (iii) Milestone payment, (iv) Royalty payment, (v) Licence fees in case of commercialization, (vi) Salaries and preferential tenus where mutually agreed, (vii) Research funding, (viii) Joint ventures, (ix) Joint ownership of relevant IPRs, etc. Similarly, non-monetary benefits may include, (i) Sharing of research results, (ii) Collaboration, cooperation and contribution in scientific/R&D programmes, education and training, (iii) Participation in product development, (iv) Strengthening capacity for technology transfer, (v) Institutional capacity building, (vi) Access to relevant scientific information, including inventories and databases, (vii) Research directed towards priority needs, e.g. food and nutritional security, (viii) Joint ownership of relevant IPR.]

For NCDC	**For Beneficiary**
Director ICAR-NDRI	Head of the Organization
Date:	Date:
Place:	Place:

Annex to the Material Transfer Agreement

Declaration concerning measures of performance

The signing of the above mentioned agreement includes the obligation to adhere the following measures of performance:

By taking possession of the material the beneficiary ensures to use the material in compliance with all applicable laws and ordinances, as well as any other applicable regulations and safety rules. In general, contamination of material cannot be excluded, although appropriate measures and tests and adequate care have been applied.

For NCDC	**For Beneficiary**
Director ICAR-NDRI	Head of the Organization
Date:	Date:
Place:	Place:

Annexure-3

NCDC Culture Procurement Form

INSTITUTION'S DETAILS (Fields marked with an * are required)

Delivery to:

Institution Name:

GST Number:

Address:

City:

State/Country:

Postal/ Zip code:

Contact name*:

Tel*:

Fax:

Email*:

Invoice to: (If different)

Institution Name:

Address:

City:

State/Country:

Postal/Zip Code:

Contact Name:

Tel:

Fax:

Email:

My Institution is Commercial Academic/Non Profit making

Culture Purchased from the Category:

(a) General Deposit (b) Other Repository Deposit (c) Innovative Culture Deposit

Order Details

Order Date

Date Required

Delivery Method Speed-Post by Hand

Cultures Requirement

Purpose for the Culture requirement*-

S. No.	Organism Name	Accession No.	Quantity

For cultures general deposit & other repository deposit category:

Cost of one ampoule 2500/-

GST @ 12% for one ampoule 300/-

Total cost of one ampoule 2800/-

Total No. of cultures required

Cost of culture

GST @ 12% for cultures

Total cost of cultures

For innovative culture deposit category: (Only to buyer of technology)

Cost of one ampoule 7000/-

GST @ 18% for one ampoule 1260/-

Total cost of one ampoule 8260/-

Total no. of cultures required

Cost of culture

GST @ 18% for cultures

Total cost of cultures

Undertaking

The NCDC culture nos. ---------- will be exclusively used for research & development in Company/ M. Tech./ Ph. D Projects entitled ----------
---

----------. Further these cultures will not be distributed or used for any other project.

(Signature of H.O.D. with Seal/Managing Director/ Incharge)

Annexure-4

NCDC Culture Procurement Form for NDRI Students/Scientists/Staff Only

Indent No.
Date:
Purpose for the culture requirement:

Undertaking

The NCDC culture nos. ---------- will be exclusively used for IRC/Externally funded/ M. Tech./ Ph. D Projects entitled ---------- ---------- ----------IRC/Externally funded project no.* ---------- . further these cultures will not be distributed or used by the indenter for any other purpose.

S. No.	Organism Name	Accession No.	Quantity
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Note: Any IPR generated /technologies developed shoul be brought in to the notice of NCDC and necessary approval may be obtained from the comptent authority.
*In case of externally funded Project the charges for culture will be applicable as the cost of general category culture.
Cost of One NCDC Culture: Rs. 500/-
GST @ 12% on Cost of One Culture: Rs. 60/-
Total Cost of One NCDC Culture: 560/-
No. of Cultures Required:
Cost of - - - - -Cultures:
GST Amount (@ 12%):
Total Cost of -- - -- -- - Cultures:

I**ndented By** **Received By** **H.O.D.**
(Concerned Division/section)

H.O.D. **Incharge NCDC**
DM Division

Annexure-5

Activation of freeze dried bacterial/lactic acid cultures

Carefully open the ampoule using aseptic techniques and activate the culture as given below:

- Prepare the skim milk tubes and flasks.
- For preparation of skim milk dissolve the skim milk powder @12.5% in distilled water (12.5gm skim milk powder in 100 ml distilled water).
- Prepare 3-4 skim milk tubes by distributing 5.0 ml of skim milks prepared in each test tube and100 mlconical flasks.
- Seal the mouth of these milk tubes and flasks with cotton plug tightly and cover with paper. Keep these skim milk test tubes &flasks in an autoclave for sterilization.
- If autoclave is not available, keep this material in pressure cooker upto 3 Whistles and 15minute on low flame.
- After autoclaving, keep the material at room temperature for cooling and keep these materials in incubator at 37ºC for over night to check the sterility.
- For better sterilized conditions, the next step should be carried out preferably in a laminar air flow chamber. But if laminar air flow is not available, next steps should be carried out between two burners on the side.
- Mark a deep scratch above the content with the help of doctor's file/triangular file.
- Break open the ampouleby holding it with both hands and giving jerk in the opposite direction into the marked surface.
- By using a sterilized skim milk tube aseptically add 4-5 drops of sterilized milk/appropriate broth medium with the help of pasture pipette.
- Mix the content gently and then transfer the total content to 5 ml sterilized skim milk /broth medium.
- Incubate the inoculated milk/ broth tube at 14-16 hours at 30 C for Mesophilic cultures and at 37C for the rmophilic cultures. For yoghurt culture incubate at 42C for 4hours.
- Activate the culture by transferring it into sterilized skim milk flask /appropriate broth @ 1-2% (1-2 ml culture in 100 ml skim milk flask).
- If it is for making dahi/ Yoghurt, culture can be used for preparation of curd/ yoghurt on large scale by further subculturing (transfer of culture @1-2% from already settled curd in another conical flask containing milk).
- Store the activated cultures in the refrigerator at 4 ºC. Dairy cultures can maintain in litmus milk plus chalk by repeated subculturing at 2-3 months. Non – lactic may maintained by repeated subculturing on appropriate agar slopes.
- Given proper treatmentand growth conditions most freeze- dried cultures may grow in 3 days. However, some freeze-dried culture may exhibit a prolong lag period and therefore should be incubated for 4-5 days before discarding as unviable.

NOTE: It is presumed that the cultures will be handled at the user's end by trained person(s) competent in microbiological techniques

Annexure-6

Activation of freeze dried yeast and mould cultures

Carefully open the ampoule using aseptic techniques and activate the culture as given below:

- Prepare the Potato dextrose Broth/Yeast Peptone Dextrose Broth tubes and agar media and autoclave it.
- Decrease the pH of broth and agar media (3.5-4.0pH) by adding prepared sterilized tartaric acid (10%).
- If autoclave is not available, keep this material in pressure cooker upto 3Whistles and15 minute on low flame.
- After autoclaving keep the material at room temperature or cooling and keep these materials in incubator at 30^{o}C for two days to check the sterility.
- The next step should be carried out in a Biosafety cabine t/ laminar air flow chamber.
- Mark a deep scratch above thecontent with the help of doctor's file/triangular file.
- Break open the ampoule by holding it with both hands and giving a jerk in the opposite direction to the marked surface.
- By using a sterilized broth tube aseptically add 4-5 drops of sterilized broth medium with the help of pasture pipette.
- Mix the content gently and then transfer the total content to 5 ml sterilized broth medium.
- Incubate the inoculated broth tube for 2-3 days at 30^{o}C.
- After the visual turbidity in the broth tubes spread/streak the culture on prepared agar plates according to use.
- Incubate the streaked/spreaded plates at 30^{o}C for 2-3days.After incubation store at 4^{o}C.
- Reactivate these plates after every 10days.
- Given proper treatment and growth conditions most freeze- dried cultures may grow in 3 days. However, some freeze-dried culture may exhibit a prolong lag period and therefore should be incubated for 4-5 days before discarding as unviable.

NOTE: It is presumed that the cultures will be handled at the user's end by trained person(s) competent in microbiological techniques.

Annexure-7

Activation of freeze dried anaerobic cultures

Carefully open the ampoule using aseptic techniques and activate the culture as given below:

- Prepare the Broth tubes specific to the culture.
- Keep these broth tubes in an autoclave for sterilization.
- If autoclave is not available, keep this material in pressure cooker upto 3Whistles and 15 minute on low flame.
- After autoclaving, keep the material at room temperature for cooling and keep these materials in incubator at 37ºC for overnight to check the sterility.
- For better sterilized conditions, the next step should be carried out in a Biosafety cabinet.
- Mark a deep scratch above the content with the help of doctor'sfile/triangular file.
- Break open the ampoule by holding it with both hands and giving jerk in the opposite direction to the marked surface.
- By using a sterilized broth tube aseptically add 4-5 drops of sterilized broth medium with the help of pasture pipette.
- Mix the content gently and then transfer the total content to 5 ml sterilized broth medium.
- Incubate the inoculated broth tube at 24-48 h our longer (turbidity due to growth of culture appears) at 37ºC in anaerobic jar with gas packs.
- After visible turbidity activate the culture by subculturing in specific media tubes under the same conditions.
- Store the activated cultures in the refrigerator at 4ºC.
- Given proper treatment and growth conditions most freeze- dried cultures may grow in 3 days. However, some freeze-dried culture may exhibit a prolong lag period and therefore should be incubated for 4-5 days before discarding as unviable.

NOTE: It is presumed that the cultures will be handled at the user's end by trained person(s) competent in microbiological techniques.

Annexure-8

Composition of NCDC Culture Activation Media

ALKALINEGPYC MEDIUM (g/L)

Glucose	-	10.0
Peptone	-	5.0
YeastExtract	-	5.0
Dipotassium hydrogen ortho-phosphate	-	1.0
MagnesiumSulphate	-	0.2
Agar	-	15.0
Distilledwater	-	1000 ml
pH	-	10.0

Sodium Carbonate (1%) was sterilized separately and added to the medium aseptically to get pH 10.0.

BRAIN HEART INFUSION (g/L)

Calf Brain (infusion)	-	20.0
Beef Heart (infusion)	-	25.0
Proteose Peptone	-	10.0
Sodium Chloride	-	5.0
Disodium phosphate	-	2.5
Dextrose	-	2.0
Distilled water	-	1000 ml
pH	-	7.4

CHINA BLUE AGAR (g/L)

Yeast Extract	-	3.0
Peptone	-	5.0
Cow milk	-	100 ml
Agar	-	20.0
China Blue (saturated sol.)	-	2.5 ml

Mix the contents and make the volume to1000 ml by distilled water.

CITRATE AGAR (g/L)

Tryptone	-	2.5
Dextrose	-	5.0
Lactose	-	5.0
Sod.citrate	-	2.0
Ca.lactate	-	8.0
Agar	-	20.0
Distilled water	-	1000 ml

ELLIKER's BROTH (g/L)

Pancreatic digest of casein	-	20.0
YeastExtract	-	10.0
Gelatin	-	4.0
Glucose	-	3.0
Ascorbicacid	-	2.5
Lactose	-	2.5
SodiumChloride	-	2.5
Sucrose	-	2.5
Sodiumacetate	-	2.5
pH	-	6.8

EOSINE METHYLENE BLUE AGAR (g/L)

Peptone	-	10.0
Lactose	-	10.0
Dipotassium hydro.phosphate	-	2.0
EosinY	-	0.4
MethyleneBlue	-	0.065
Agar	-	20.0
Distilledwater	-	1000 ml
pH	-	7.1

LITMUS CHALK MILK (g/L)

Skim milk	-	1000 ml
Azolitmin	-	0.75

Take 1.0 ml of separated cow milk or reconstituted skim milk (10 %) and add 0.75 g of azolitmin. Stir gently and heat to boiling. Add a pinch of chalk to tubes and distribute the milk to them. Sterilize them at 10 psi for 20min.

LIVER EXTRACT AGAR (g/L)

Take 500 g of goat liver and cook in a pressure cooker to bring the pressure to 15 psi. Decant and filter through absorbent cotton.

Solution A

Potassium hydro.ortho phosphate -	12.5g
Potassium dihydro.ortho phosphate-	12.5g

Dissolve in water to make the final volume to100 ml

Solution B

Magnesium Sulphate	-	500 mg
Sodium Chloride	-	250 mg
Manganese Sulphate	-	250 mg
Ferrous Sulphate	-	250 mg

Dissolve in distilled water to make the final volume to 100 ml.

Preparation of the medium

Add all the ingredients except agar to liver extract. Mix thoroughly to dissolve and adjust pH to 7.2. Add agar powder and bring to boil. Dispense into tubes or flasks and autoclave them at15psi for 15 min.

LEE's AGAR (g/L)

Tryptone	-	10.0
Yeast Extract	-	10.0
Lactose	-	5.0
Sucrose	-	5.0
Ca.carbonate	-	3.0
Di-pot.hydro.phosphate	-	0.5
Bromocresol purple	-	0.002%
Agar	-	20.0
Distilledwater	-	1000 ml
pH	-	7.0

BCP is added in the form of 1.0 ml of sterile 0.2% solution (autoclaved at 15 psi for 15 min.) per 100 ml of sterile agar just before pouring the plates.

LURIA BROTH (g/L)

Tryptone	-	10.0
Yeast Extract	-	5.0
Sodium Chloride	-	10.0
Distilled Water	-	1000 ml
pH	-	7.0

LEUCONOSTOC MEDIUM (g/L)

Tryptone	-	10.0
Yeast Extract	-	10.0
Pot.monohydro.phosphate	-	5.0
Tomato juice	-	100 ml
Salt solution*	-	20 ml
D-glucose	-	10.0
Agar	-	20.0

Mix the contents and make the volume to1000 ml with distilled water.

Tomato juice: 1 volume of tomato with 3 volume of water is steamed for half an hour and then juice is extracted.

Salt solution: Each 100 ml contains

Magnesium Sulphate`	-	0.9 g
Sodium Chloride	-	0.04 g
Ferrous Sulphate	-	0.072g
Manganese Sulphate	-	0.18 g
Ascorbic acid	-	0.002 g

*Salt solution should be Seitz filtered and added aseptically.

LYPA BROTH (g/L)

Lactose	-	20.0
Peptone	-	5.0
Yeast Extract	-	5.0
Beef Extract	-	10.0
Di-Sod.Hydrogen phosphate	-	3.0
Distilled water	-	1000 ml

M-17AGAR (g/L)

Peptone	-	10.0
Beef Extract	-	8.0
Yeast Extract	-	4.0
Dextrose	-	20.0
Tween80	-	1.0
Di-pot.hydrogen phosphate	-	2.0
Sodium acetate	-	5.0
Tri-ammonium citrate	-	2.0
Manganese Sulphate	-	0.5
Magnesium Sulphate	-	0.02
Agar	-	20.0
Distilled water	-	1000 ml
pH	-	6.2

MALT EXTRACT AGAR (g/L)

Malt Extract	-	3.0
Glucose	-	5.0
Yeast Extract	-	3.0
Peptone	-	5.0
Agar	-	20.0
Distilled water	-	1000 ml
pH	-	6.2

MANNITOL AGAR (g/L)

Yeast Extract	-	5.0
Peptone	-	3.0
Mannitol	-	25.0
Agar	-	15.0
Distilled water	-	1000 ml.

MRS AGAR (g/L)

Peptone	-	10.0
Beef Extract	-	8.0
Yeast Extract	-	4.0
Dextrose	-	20.0
Tween-80	-	1.0 ml
Di-Pot.hydrogen phosphate	-	2.0
Sodium acetate	-	5.0
Tri-ammonium citrate	-	2.0
Magnesium sulphate	-	0.2
Maganese sulphat	-	0.5
Agar	-	20.0
Distilled water	-	1000 ml
pH	-	6.2

NUTRIENT AGAR (g/L)

Beef Extract	-	3.0
Peptone	-	5.0
Sodium Chloride	-	5.0
Agar	-	20.0
Distilled water	-	1000 ml
pH	-	6.8

POTATO DEXTROSE AGAR (g/L)

Potato	-	200.0
Glucose	-	20.0
Agar	-	20.0
Distilled water	-	1000 ml

Peel and wash potatoes, cut into pieces and boil in 1000 ml of distilled water till cooked. Decant and filter through cotton wool. Mix glucose and agar, make up volume to1000ml. Gently heat to dissolve agar.Dispense in to tubes and flasks. Autoclave at 15 psi for15 min.

SKIM MILK (g/L)

Skim milk powder	-	120.0
Distilled water	-	1000 ml

YEAST DEXTROSE BROTH (G/L)

Peptone	-	10.0
Yeast Extract	-	5.0
Glucose	-	10.0
Sodium acetate	-	10.0
Distilled water	-	1000 ml
pH	-	6.8

TRYPTONE GLUCOSE YEAST EXTRACT AGAR (g/L)

Tryptone	-	10.0
Glucose	-	10.0
Yeast Extract	-	10.0
Tween 80	-	2.0
Magnesium sulphate	-	50.0 mg
Maganese sulphate	-	50.0 mg
Distilled water	-	1000 ml
pH	-	6.5

CHAWLK LITMUS MILK (g/L)

Skimmed Milk Powder	-	100-120
Limus Dye	-	1
Yeast Extract	-	3
Dextrose	-	10
Calcium carbonate	-	20

Annexure-9

Numeric List of Cultures

NCDC No.	Name of Microorganism
1	*Levilactobacillus brevis*
2	*Secundilactobacillus collinoides*
3	*Weisella confusa*
4	*Lactobacillus delbrueckii ssp. bulgaricus*
5*	*Lactobacillus helveticus*
6	*Pediococcus acidilactici*
7	*Dahi Culture*
8	*Lactobacillus delbrueckii ssp. bulgaricus*
9	*Lactobacillus delbrueckii ssp. bulgaricus*
10	*Lacticaseibacillus rhamnosus*
11	*Dahi Culture*
12	*Enterococcus faecium*
13	*Lactobacillus acidophilus*
14	*Lactobacillus acidophilus*
15	*Lactobacillus acidophilus*
16	*Lactobacillus acidophilus*
17	*Lacticaseibacillus casei ssp. casei*
18	*Lacticaseibacillus rhamnosus*
19	*Lacticaseibacillus rhamnosus*
20	*Lactiplantibacillus plantarum*
21	*Lactiplantibacillus plantarum*
22	*Lacticaseibacillus paracasei ssp. paracasei*
23	*Leuconostoc mesenteroides ssp. dextranicum*
24	*Lacticaseibacillus rhamnosus*
25	*Lactiplantibacillus plantarum*
26	*Lacticaseibacillus casei ssp. casei*
27	*Lacticaseibacillus casei ssp. casei*
28	*Levilactobacillus brevis*
29	*Leuconostoc mesenteroide ssp. cremoris*
30	*Leuconostoc mesenteroides ssp. dextranicum*
31	*Leuconostoc mesenteroides ssp. dextranicum*
32	*Leuconostoc mesenteroides ssp. dextranicum*
33	*Lactobacillus acidophilus*
34	*Leuconostoc mesenteroides ssp. dextranicum*
35	*Lactobacillus helveticus*
36	*Levilactobacillus brevis*
37	*Lactococcus lactis*
38	*Streptococcus thermophilus*
39	*Kluyveromyces marxianus*
40	*Lactobacillus delbrueckii*
41	*Lacticaseibacillus casei ssp. casei*
42	*Saccharomyces cerevisiae*
43	*Tarulipsis candida*

44	*Candida guillermondii*
45	*Saccharomyces cerevisiae*
46	*Kluyveromyces marxianus*
47	*Sacharomyces cerevisiae*
48	*Sacharomyces uvarum*
49	*Saccharomyces cerevisiae*
50	*Saccharomyces cerevisiae*
51	*Rhodotorula glutinis*
52	*Rhizopus oryzae*
53	*Aspergillus parasiticus*
54	*Lacticaseibacillus casei ssp. casei*
55	*Aspergillus niger*
56	*Penicillium camemberti*
57*	*Streptococcus thermophilus*
58	*Leuconostoc mesenteroides*
59	*Odium sp.*
60	*Lactococcus lactis ssp. diacetylactis*
61	*Lactococcus lactis ssp. diacetylactis*
62	*Lactococcus lactis ssp. diacetylactis*
63	*Lactobacillus casei ssp. casei*
64	*Lactococcus lactis ssp. lactis*
65	*Desulfotomaculum riminis*
66	*Bacillus cereus*
67	*Bacillus megaterium*
68	*Bacillus polymyxa*
69	*Geobacillus stearothermophilus*
70	*Bacillus subtilis*
71	*Bacillus subtilis*
72	*Acetobactor johnsonii*
73	*Proteus vulgaris*
74	*Streptococcus thermophilus*
75	*Streptococcus thermophilus*
76	*Streptococcus thermophilus*
77	*Limosilactobacillus ruteri*
78	*Lacticaseibacillus casei ssp. casei*
79*	*Streptococcus thermophilus*
80	*Lacticaseibacillus casei ssp. casei*
81	*Lactococcus lactis ssp. cremoris*
82	*Lactococcus lactis ssp. cremoris*
83	*Lactococcus lactis ssp. cremoris*
84	*Lactococcus lactis ssp. cremoris*
85	*Lactococcus lactis ssp. cremoris*
86	*Lactococcus lactis ssp. cremoris*
87	*Lactococcus lactis ssp. lactis*
88	*Lactococcus lactis ssp. lactis*
89	*Enterococcus faecalis*
90	*Enterococcus faecium*
91	*Enterococcus faecalis*
92	*Lacticaseibacillus paracasei*
93	*Enterococcus faecalis*
94	*Lactococcus lactis ssp. lactis*
95*	*Streptococcus thermophilus*
96	*Lactococcus lactis ssp. lactis*

97	*Lactococcus lactis ssp. lactis*
98	*Lacticaseibacillus casei ssp. casei*
99	*Lactococcus lactis ssp. lactis*
100	*Lactococcus lactis ssp. lactis*
101	*Lactococcus lactis ssp. lactis*
102	*Lactococcus lactis ssp. lactis*
103*	*Streptococcus thermophilus*
104	*Pseudomonas fragi*
105	*Pseudomonas aeruginosa*
106	*Enterobactor aerogenes*
107	*Lactococcus lactis ssp. lactis*
108	*Serratia marcescens*
109	*Staphylococcus aureus*
110	*Staphylococcus aureus*
111	*Staphylococcus albus*
112	*Micrococcus luteus*
113	*Lactococcus lactis ssp.lactis*
114	*Enterococcus faecalis*
115	*Enterococcus faecalis*
116	*Enterococcus faecalis*
117	*Enterococcus faecalis*
118	*Lacticaseibacillus paracasei*
119	*Enterococcus faecalis*
120	*Enterococcus faecalis*
121	*Lacticaseibacillus casei ssp. casei*
122	*Enterococcus faecalis*
123	*Enterococcus faecalis*
124	*Enterococcus faecalis*
125	*Lactococcus sp.*
126	*Lacticaseibacillus casei ssp. casei*
127	*Lactococcus sp.*
128	*Enterococcus faecalis*
129	*Lactococcus lactis ssp. lactis*
130	*Lactococcus sp.*
131	*Lacticaseibacillus casei ssp. casei*
132	*Lacticaseibacillus casei ssp. casei*
133	*Micrococccus caseolgticus*
134	*Esherichia coli*
135	*Esherichia coli*
136	*Lacticaseibacillus casei ssp. casei*
137	*Acetobactor aceti*
138	*Klebsiella pneuminiae*
139	*Propionibacterium freudenreichii ssp.shermanii*
140	*Lacticaseibacillus paracasei*
141	*Limosilactobacillus fermentum*
142	*Lacticaseibacillus casei ssp. casei*
143	*Leuconostoc mesenteroides ssp.dextranicum*
144	*Yoghurt mix culture*
145	*Yoghurt mix culture*
146	*Yoghurt mix culture*
147	*Cheddar cheese culture*
148	*Cheddar cheese culture*
149	*Cheddar cheese culture*

150	*Cheddar cheese culture*
151	*Cheddar cheese culture*
152	*Cheddar cheese culture*
153	*Dahi culture*
154	*Lacticaseibacillus paracasei*
155	*Lactococcus lactis ssp. lactis*
156	*Limosilactobacillus fermentum*
157	*Lactococcus lactis ssp. lactis*
158	*Streptococcus thermophillus*
159	*Dahi culture*
160	*Dahi culture*
161	*Dahi culture*
162	*Cheddar cheese culture*
163	*Cheddar cheese culture*
164	*Cheddar cheese culture*
165	*Cheddar cheese culture*
166	*Dahi culture*
167	*Dahi culture*
168	*Gouda cheese culture*
169*	*Streptococcus thermophillus*
170	*Lacticaseibacillus casei ssp. casei*
171	*Lacticaseibacillus casei ssp. casei*
172	*Cheddar cheese culture*
173	*Enterobactor aerogenes*
174	*Micrococcus luteus*
175	*Lactococcus lactis ssp.lactis*
176	*Lacticaseibacillus paracasei*
177	*Streptococcus thermophillus*
178	*Lacticaseibacillus paracasei*
179	*Lacticaseibacillus casei ssp. casei*
180	*Bacillus cereus*
181	*Lacticaseibacillus casei ssp. casei*
182	*Pediococcus pentosaceus*
183	*Lactiplantibacillus plantarum*
184	*Lactobacillus delbrueckii ssp.bulgaricus*
185	*Leuconostoc mesenteroides ssp. mesenteroides*
186	*Saccharomyces cerevisiae*
187	*Leuconostoc mesenteroides ssp. mesenteroides*
188	*Torulopsis candida*
189	*Saccharomyces cerevisiae*
190	*Lactiplantibacillus plantarum*
191	*Lactococcus lactis ssp. lactis*
192	*Cheese culture*
193	*L. lactis ssp.lactis*
194	*L. delbrueckii*
195	*Pediococcus pentosaceus*
196	*L. lactis ssp.lactis*
197	*Cheese culture*
198	*L. lactis ssp.lactis*
199	*Streptococcus thermophilus*
200	*Enterococcus faecium*
201	*Lactiplantibacillus plantarum*
202	*Cheese cuture*

203	*Entrococcus faecalis*
204	*Pediococcus pentosaceus*
205	*Bacillus cereus*
206	*Geobacilus stearothermophillus*
207	*Leuconostoc mesenteroides ssp. Mesenteroides*
208	*Streptococcus agalactiae*
209	*Escherichia coli*
210	*Limosilactobacillus fermentum*
211	*Entrococcus faecalis*
212	*Acinetobacter calcoaceticus*
213	*Lactobacillus delbruekii*
214	*Limosilactobacillus fermentum*
215	*Bacillus sublilis*
216	*Bacillus sublilis*
217	*Lactobacillus delbruekii*
218	*Lactobacillus delbruekii*
219	*Leuconostoc mesenteroides ssp.mesenteroides*
220	*Limosilactobacillus fermentum*
221	*Lactiplantibacillus plantarum*
222	*Limosilactobacillus fermentum*
223	*Entrococcus faecalis*
224	*Aspergillus niger*
225	*Pediococcus pentosaceus*
226	*Aspergillus flavus*
227	*Lactiplantibacillus plantarum*
228	*Lactobacillus delbrueckii*
229	*Lactobacillus delbrueckii*
230	*Lactobacillus delbrueckii*
231	*Bifidobacterium bifidum*
232	*Bifidobacterium bifidum*
233	*Bifidobacterium bifidum*
234	*Lactobacillus delbrueckii*
235	*Lactobacillus delbrueckii*
236	*Bifidobacterium adolescentis*
237	*Staphylococcus aureus*
238	*Lactococcus lactis ssp.lactis*
239	*Lactococcus lactis ssp.lactis*
240	*Bacillus cereus*
241	*Leuconostoc mesenteroides ssp. mesenteroides*
242	*Lactococcus lactis ssp.lactis*
243	*Lactococcus lactis ssp.lactis*
244	*Lactococcus lactis ssp.lactis*
245	*Lactococcus lactis ssp.lactis*
246	*Lactococcus lactis ssp.lactis*
247	*Lactobacillus delbrueckii*
248	*Limosilactobacillus fermentum*
249	*Escherichia coli*
250	*Limosilactobacillus fermentum*
251	*Limosilactobacillus fermentum*
252	*Lactiplantibacillus plantarum*
253	*Lactobacillus delbrueckii ssp.bulgaricus*
254	*Limosilactobacillus fermentum*
255	*Limosilactobacillus fermentum*

256	*Cheese culture*
257	*Kluyveromyces lactis*
258	*Lactiplantibacillus plantarum*
259	*Proteus vulgaris*
260	*Yoghurt culture*
261	*Dahi culture*
262	*Yoghurt culture*
263	*Yoghurt culture*
264	*Limosilactobacillus fermentum*
265	*Limosilactobacillus fermentum*
266	*Bacillus licheniformis*
267	*Aspergillus niger*
268	*Aspergillus flavus*
269*	*Bifidobacterium brevis*
270	*Cheese culture*
271	*Lactcobacillus delbrueckii*
272	*Lacticaseibacillus casei*
273	*Pediococcus pentosaceus*
274	*Lactococcus lactis ssp. lactis*
275	*Cheese culture*
276	*Lactiplantibacillus plantarum*
277	*Lactobacillus delbrueckii ssp. bulgaricus*
278	*Lactococcus lactis ssp. Lactis*
279	*Candida parapsilosis*
280	*Candida butyric*
281	*Lactobacillus delbrueckki ssp. bulgaricus*
282	*Lactococcus lactis ssp.cremoris*
283	*Lactobacillus delbrueckii ssp. lactis*
284	*Lactococcus lactis ssp.lactis*
285	*Lactobacillus delbrueckii ssp. bulgaricus*
286	*Candida cylindracea*
287	*Pediococcus pentosaceus*
288	*Lactobacillus helveticus*
289	*Lactococcus lactis ssp. lactis*
290	*Lactococcus delbrueckii ssp. lactis*
291	*Lactobacillus acidophilus*
292	*Lactobacillus helveticus*
293	*Streptococcus thermophilus*
294	*Leuconostoc mesenteroides ssp. mesenteroides*
295	*Lactobacillus delbrueckii*
296	*Lacticaseibacillus rhamnosus*
297	*Lacticaseibacillus casei*
298	*Lacticaseibacillus casei*
299	*Lacticaseibacillus casei*
300	*Mixed yoghurt culture*
301	*Limosilactobacillus fermentum*
302	*Aspergillus oryzae*
303	*Streptococcus thermophillus*
304	*Lactobacillus delbruckii ssp. bulgaricus*
305	*Pediococcus pentosaceus*
306	*Lactococcus lactis ssp. Cremoris*
307	*Lactobacillus delbrueckii*
308	*Lactobacillus delbrueckii ssp. bulgaricus*

309	*Lactococcus lactis ssp. Cremoris*
310	*Lactococcus lactis ssp. Cremoris*
311	*Streptococcus thermophilus*
312	*Streptococcus thermophilus*
313	*Lactococcus lactis ssp. lactis*
314	*Lactococcus lactis ssp. lactis*
315	*Aspergillus niger*
316	*Pseudomonas fluorescence*
317	*Laactococcus delbrueckii*
318	*Lactococcus delbrueckii ssp. bulgaricus*
319	*Lactococcus lactis ssp. Lactis biovar diacetyllactis*
320	*Limosilactobacillus fermentum*
321	*Limosilactobacillus fermentum*
322	*Pediococcus pentosaceus*
323	*Streptococcus thermophilus*
324	*Streptococcus thermophilus*
325	*Streptococcus thermophilus*
326	*Geobacillus stearothermophilus*
327	*Geobacillus stearothermophilus*
328	*Geobacillus stearothermophilus*
329*	*Streptococcus thermophilus (MD1)*
330*	*Streptococcus thermophilus (MD2)*
331	*Pediococcus pentosaceus*
332	*Pediococcus pentosaceus*
333	*Lactobacillus sp.*
334*	*Streptococcus thermophilus (MD3)*
335	*Lacticaseibacillus paracasei*
336	*Lactococcus lactis ssp.lactis*
337	*Lactococcus lactis ssp. Lactis*
338	*Lactococcus lactis ssp. Lactis*
339	*Lactococcus lactis ssp. Lactis*
340	*Lactococcus lactis ssp. Lactis*
341	*Lactococcus lactis ssp. Lactis*
342	*Lactobacillus delbrueckii ssp. bulgaricus*
343	*Lactobacillus acidophilus*
344	*Lactiplantibacillus plantarum*
345	*Streptococcus thermophilus V3(NDDB)*
346	*Streptococcus thermophilus JE(NDDB)*
347	*Lacticaseibacillus rhamnosus GG*
348	*Leconostoc mesenteroides ssp. Mesenteroides*
349	*Leconostoc mesenteroides ssp. Mesenteroides*
350	*Lacticaseibacillus rhamnosus –RS-12*
351	*Leconostoc mesenteroides ssp. Mesenteroides*
352#	*Streptococcus thermophilus*
353	*Lacticaseibacillus rhamnosus*
354	*Lacticaseibacillus rhamnosus RL-4*
355	*Lactococcus lactis ssp. Lactis*
356	*Lactobacillus argentoratensis RZ-18*
357	*Lacticaseibacillus casei*
358	*Lacticaseibacillus casei*
359	*Lacticaseibacillus casei*
360	*Lactococcus lactis ssp. lactis*
361	*Escherichia coli*

362	*Lactococcus lactis ssp. Lactis*
363	*Lactococcus lactis ssp. Lactis*
364	*Saccharomyces cerevisiae*
365	*Saccharomyces cerevisiae*
366	*Lactobacillus corniformis*
367	*Lactobacillus corniformis*
368	*Lactobacillus corniformis*
369	*Lactobacillus corniformis*
370	*Lactobacillus helvaticus*
371	*Levilactobacillus brevis*
372	*Lactiplantibacillus plantarum*
373	*Lactiplantibacillus plantarum*
374	*Lactiplantibacillus plantarum*
375	*Lactiplantibacillus plantarum*
376	*Lactiplantibacillus plantarum*
377	*Lactiplantibacillus plantarum*
378	*Lactiplantibacillus plantarum*
379	*Lactiplantibacillus plantarum*
380	*Lactiplantibacillus plantarum*
381	*Lactiplantibacillus plantarum*
382	*Lactiplantibacillus plantarum*
383	*Lacticaseibacillus paracasei*
384	*Lacticaseibacillus paracasei*
385	*Lacticaseibacillus paracasei*
386	*Lacticaseibacillus paracasei*
387	*Lacticaseibacillus paracasei*
388	*Lacticaseibacillus paracasei*
389	*Lacticaseibacillus paracasei*
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395	*Lacticaseibacillus paracasei*
396	*Lacticaseibacillus paracasei*
397	*Lacticaseibacillus paracasei*
398	*Lacticaseibacillus paracasei*
399#	*Streptococcus thermophilus*
400#	*Limosilactobacillus fermentum*
401*	*Streptococcus thermophilus*
402*	*Lactococcus lactis ssp.lactis*
403	*Levilactobacillus brevis*
404	*Lactococcus lactis ssp.lactis*
405	*Lactococcus delbrueckii*
406	*Limosilactobacillus fermentum*
407	*Limosilactobacillus fermentum*
408	*Limosilactobacillus fermentum*
409	*Lactococcus lactis ssp. Lactis*
410	*Limosilactobacillus fermentum*
411	*Limosilactobacillus fermentum*
412	*Limosilactobacillus fermentum*
413	*Lacticaseibacillus paracasei*
414	*Lactiplantibacillus plantarum*

415	*Lactiplantibacillus plantarum*
416	*Lactiplantibacillus plantarum*
417	*Lactiplantibacillus plantarum*
418	*Lactococcus lactis ssp.lactis*
419	*Leuconostoc dextranicum*
420	*Leuconostoc dextranicum*
421	*Leuconostoc mesenteroides*
422	*Leuconostoc dextranicum*
423	*Leuconostoc dextranicum*
424	*Leuconostoc dextranicum*
425	*Leuconostoc dextranicum*
426	*Leuconostoc dextranicum*
427	*Leuconostoc dextranicum*
428#	*Streptococcus thermophilus*
429	*Streptococcus thermophilus*
430	*Streptococcus thermophilus*
431	*Lactococcus lactis ssp lactis*
432	*Lactococcus lactis ssp.lactis*
433	*Streptococcus thermophilus*
434	*Lactococcus lactis ssp.lactis*
435*	*Streptococcus thermophilus*
436#	*Streptococcus thermophilus*
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446	*Streptococcus thermophilus*
447	*Streptococcus thermophilus*
448	*Lactococcus lactis ssp.lactis*
449	*Lactococcus lactis ssp. Lactis*
450	*Streptococcus thermophilus*
451	*Streptococcus thermophilus*
452	*Lactococcus lactis ssp.lactis*
453	*Streptococcus thermophilus*
454*	*Streptococcus thermophilus*
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458	*Streptococcus thermophilus*
459	*Streptococcus thermophilus*
460	*Lactococcus lactis ssp. lactis*
461	*Streptococcus thermophilus*
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464	*Streptococcus thermophilus*
465	*Lactococcus lactis ssp. lactis*
466	*Streptococcus thermophilus*
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468	*Streptococcus thermophilus*
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470	*Streptococcus thermophilus*
471	*Lactococcus lactis ssp. lactis*
472	*Streptococcus thermophilus*
473	*Streptococcus thermophilus*
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507	*Streptococcus thermophilus*
508	*Lactococcus lactis ssp.lactis*
509	*Streptococcus thermophilus*
510	*Streptococcus thermophilus*
511	*Streptococcus thermophilus*
512	*Streptococcus thermophilus*
513	*Streptococcus thermophilus*
514	*Streptococcus thermophilus*
515	*Streptococcus thermophilus*
516	*Streptococcus thermophilus*
517	*Streptococcus thermophilus*
518	*Lactococcus lactic ssp.lactis*
519	*Streptococcus thermophilus*
520	*Streptococcus thermophilus*

521	*Pediococcus pentosaceus*
522	*Pediococcus pentosaceus*
523	*Streptococcus thermophilus*
524	*Streptococcus thermophilus*
525	*Streptococcus thermophilus*
526*	*Streptococcus thermophilus*
527	*Pediococcus pentosaceus*
528	*Streptococcus thermophilus*
529	*Pediococcus pentosaceus*
530	*Streptococcus thermophilus*
531	*Streptococcus thermophilus*
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534	*Streptococcus thermophilus*
535	*Pediococcus pentosaceus*
536	*Pediococcus pentosaceus*
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538	*Pediococcus pentosaceus*
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540	*Pediococcus pentosaceus*
541	*Streptococcus thermophilus*
542	*Pediococcus pentosaceus*
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544*	*Streptococcus thermophilus*
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546	*Pediococcus pentosaceus*
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557	*Pediococcus pentosaceus*
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562	*Streptococcus thermophilus*
563	*Pediococcus pentosaceus*
564	*Streptococcus thermophilus*
565	*Streptococcus thermophilus*
566	*Pediococcus pentosaceus*
567	*Pediococcus pentosaceus*
568	*Pediococcus pentosaceus*
569	*Pediococcus pentosaceus*
570	*Pediococcus pentosaceus*
571	*Streptococcus thermophilus*
572	*Pediococcus pentosaceus*
573	*Streptococcus thermophilus*

574	*Pediococcus pentosaceus*
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576	*Pediococcus pentosaceus*
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579	*Pediococcus pentosaceus*
580	*Streptococcus thermophilus*
581	*Streptococcus thermophilus*
582	*Streptococcus thermophilus*
583	*Streptococcus thermophilus*
584	*Pediococcus pentosaceus*
585	*Pediococcus pentosaceus*
586	*Pediococcus pentosaceus*
587	*Pediococcus pentosaceus*
588	*Pediococcus pentosaceus*
589	*Pediococcus pentosaceus*
590	*Leuconostoc mesenteroid ssp. mesenteroid*
591	*Leuconostoc mesenteroid ssp. mesenteroid*
592	*Propionibacterium thoenii ssp.thonii*
593	*Propionibacterium freudenreichii ssp. freudenreichii*
594	*Propionibacterium freudenreichii ssp. shermanii*
595	*Propionibacterium jensenii*
596	*Propionibacterium acidipropionici*
597	*Enterococcus lactis*
598	*Bacillus licheniformis*
599*	*Lactobacillus helveticus*
600	*Lactobacillus acidophilus*
601	*Lacticaseibacillus rhamnosus*
602	*Lactiplantibacillus plantarum*
603	*Weisella cibarica*
604	*Limosilactobacillus fermentum*
605*	*Limosilactobacillus fermentum*
606	*Limosilactobacillus fermentum*
607	*Limosilactobacillus fermentum*
608	*Limosilactobacillus fermentum*
609	*Pediococcus acidilactici*
610#	*Lacticaseibacillus rhamnosus*
611	*Lactococcus lactis ssp. Lactis*
612	*Pediococcus pentosaceus*
613	*Lactobacillus niridescence*
614	*Ligilactobacillus agilis*
615	*Lactobacillus equi*
616	*Pediococcus pentosaceus*
617	*Pediococcus pentosaceus*
618	*Pediococcus pentosaceus*
619	*Leuconostoc mesenteroid ssp. Dextranicum*
620	*Leuconostoc mesenteroides*
621	*Lactococcus lactis ssp.diacetylactis*
622	*Saceharomyces cerevisae*
623	*Kluyveromyces marxianus*
624	*Lactiplantibacillus plantarum*
625	*Lactiplantibacillus plantarum*
626	*Lacticaseibacillus rhamnosus*

627	*Lactobacillus pracasei ssp.paracasei*
628	*Lactobacillus delbrueckii ssp. bulgaricus*
629	*Lactobacillus delbrueckii ssp. bulgaricus*
630	*Lactobacillus delbrueckii ssp. bulgaricus*
631	*Lactobacillus delbrueckii ssp. bulgaricus*
632	*Lactobacillus delbrueckii ssp. bulgaricus*
633	*Lactiplantibacillus plantarum*
634	*Lactiplantibacillus plantarum*
635	*Lactococcus lactis*
636	*Lactiplantibacillus plantarum*
637	*Lactiplantibacillus plantarum*
638	*Enterococcus faecium*
639	*Leuconostoc mesenteroides*
640	*Weisella cibaria*
641	*Enterococcus faecium*
642	*Lactococcus lactis*
643	*Lactococcus lactis*
644	*Lactococcus lactis*
645	*Lactococcus lactis*
646	*Kluyveromyces marxianus*
647	*Kluyveromyces marxianus*
648	*Kluyveromyces marxianus*
649	*Kluyveromyces marxianus*
650	*Kluyveromyces marxianus*
651	*Kluyveromyces marxianus*
652	*Limosilactobacillus fermentum*
653	*Lactiplantibacillus plantarum*
654	*Lactiplantibacillus plantarum*
655	*Lactiplantibacillus plantarum*
656	*Lactiplantibacillus plantarum*
657	*Bifidobactiria sp.*
658	*Bifidobactiria sp.*
659	*Streptococcus thermophilus*
660	*Streptococcus thermophilus*
661	*Bifidobactiria sp.*
662	*Lactococcus lactis ssp. lactis*
663	*Lactococcus lactis ssp. lactis*
664	*Lactococcus lactis ssp. lactis*
665	*Bifidobactiria sp.*
666	*Lactococcus lactis ssp. lactis*
667	*Lactococcus lactis ssp. lactis*
668	*Lactococcus lactis ssp. lactis*
669	*Lactococcus lactis ssp. lactis*
670	*Lactococcus lactis ssp. lactis*
671	*Lactococcus lactis ssp. lactis*
672	*Lactococcus lactis*
673	*Lactococcus lactis*
674	*Lactococcus lactis*
675	*Lactococcus lactis*
676	*Lactococcus lactis*
677	*Lactococcus lactis*
678	*Lactococcus lactis*
679	*Bifidobactiria sp.*

680	*Dellaglioa Algida*
681	*Lactiplantibacillus plantarum*
682	*Limosilactobacillus fermentum*
683	*Lactiplantibacillus plantarum*
684	*Lacticaseibacillus casei*
685	*Lactiplantibacillus plantarum*
686	*Lactobacillus acidophilus*
687	*Lactiplantibacillus plantarum*
688	*Lactobacillus gasseri*
689	*Bifidobacterium animalis*
690	*Lactiplantibacillus plantarum*
691	*Lactiplantibacillus plantarum*
692	*Lactococcus lactis*
693	*Lactococcus lactis*
694	*Lactococcus lactis*
695	*Ligilactobacillus salvarius*
696	*Ligilactobacillus salvarius*
697	*Lactiplantibacillus plantarum*
698	*Lactiplantibacillus plantarum*
699	*Streptococcus thermophilus*
700	*Limosilactobacillus fermentum*
701	*Limosilactobacillus fermentum*
702	*Lactobacillus acidophilus*
703	*Bifidobacterium bifidum*
704	*Lactococcus lactis ssp. lactis*
705	*Lactococcus lactis ssp. lactis*
706	*Lactococcus lactis ssp. lactis*
707	*Lactococcus lactis ssp. lactis*
708	*Lactococcus lactis ssp. lactis*
709	*Lactiplantibacillus plantarum*
710	*Lactobacillus delbrueckii ssp. bulgaricus*
711	*Lactiplantibacillus plantarum*
712	*Streptococcus thermophilus*
713	*Limosilactobacillus fermentum*
714	*Lactiplantibacillus plantarum*
715	*Lactiplantibacillus plantarum*
716	*Limosilactobacillus fermentum*
717	*Limosilactobacillus fermentum*
718	*Limosilactobacillus fermentum*
719	*Limosilactobacillus fermentum*
720	*Limosilactobacillus fermentum*
721	*Limosilactobacillus fermentum*
722	*Limosilactobacillus fermentum*
723	*Limosilactobacillus fermentum*
724	*Limosilactobacillus fermentum*
725	*Limosilactobacillus fermentum*
726	*Lacticaseibacillus casei ssp. casei*
727	*Lacticaseibacillus casei ssp. casei*
728	*Lacticaseibacillus casei ssp. casei*
729	*Lacticaseibacillus rhamnosus*
730	*Lactobacillus pracasei ssp. paracasei*
731	*Lacticaseibacillus rhamnosus*
732	*Lacticaseibacillus casei ssp. casei*

733	*Lacticaseibacillus casei ssp. casei*
734	*Lacticaseibacillus casei ssp. casei*
735	*Lacticaseibacillus casei ssp. casei*
736	*Lacticaseibacillus casei ssp. casei*
737	*Lacticaseibacillus casei ssp. casei*
738	*Lacticaseibacillus casei ssp. casei*
739	*Lactiplantibacillus plantarum*
740	*Lactiplantibacillus plantarum*
741	*Lactiplantibacillus plantarum*
742	*Lactiplantibacillus plantarum*
743	*Lactobacillus delbrueckii*
744	*Limosilactobacillus fermentum*
745	*Lactiplantibacillus plantarum*
746	*Streptococcus thermophilus*
747#	*Lagilactobacillus salivarius*
748#	*Limosilactobacillus reuteri*
749*	*Streptococcus thermophilus*
750*	*Streptococcus thermophilus*
751	*Streptococcus thermophilus*
752*	*Streptococcus thermophilus*
753*	*Streptococcus thermophilus*
754*	*Streptococcus thermophilus*
755*	*Streptococcus thermophilus*
756*	*Streptococcus thermophilus*
757*	*Streptococcus thermophilus*
758*	*Streptococcus thermophilus*
759*	*Lacticaseibacillus rhamnosus*
760*	*Lacticaseibacillus rhamnosus*
761*	*Lactobacillus delbrueckii ssp. bulgaricus*
762*	*Lactobacillus delbrueckii ssp. bulgaricus*
763*	*Limosilactobacillus ruteri*
764*	*Lactobacillus delbrueckii ssp. bulgaricus*
765*	*Lactiplantibascillus plantarum*
766#	*Limosilactobacillus ruteri*
767*	*Streptococcus thermophilus*
768*	*Streptococcus thermophilus*
769*	*Kluyveromyces marxianus*
770*	*Kluyveromyces marxianus*
771*	*Kluyveromyces marxianus*
772*	*Kluyveromyces marxianus*
773	*Lactobacillus johnsonni*
774	*Mucormicrosporus namyslowski*
775	*Rhizopus microsporus*
776*	*Lacticaseibacillus rhamnosus*
777*	*Limosilactobacillus fermentum*
778*	*Levilactobacillus brevis*
779*	*Lactiplantibacillus pentosus*
780*	*Lactiplantibacillus pentosus*
781*	*Lactobacillus johnsonii*
782*	*Lacticaseibacillus casei*
783*	*Limosilactobacillus fermentum*
784*	*Lactiplantibacillus argentoratensis*
785*	*Limosilactobacillus fermentum*

786*	*Lactiplantibacillus plantarum*
787*	*Lactiplantibacillus plantarum*
788*	*Lactiplantibacillus plantarum*
789*	*Limosilactobacillus fermentum*
790	*Lactiplantibacillus pentosus*
791	*Limosilactobacillus reuteri*
792	*Lactiplantibacillus plantarum*
793	*Lactiplantibacillus plantarum*
794	*Lactobacillus delbrueckii ssp. bulgaricus*
795	*Latilactobacillus sakei*
796	*Lacticaseibacillus rhamnosus*
797	*Limosilactobacillus fermentum*
798	*Aspergillus oryzae*
799	*Salmonella typhi*
800*	*Lactobacillus delbrueckii ssp. bulgaricus*
801*	*Streptococcus thermophilus*
802*	*Streptococcus thermophilus*
803*	*Streptococcus thermophilus*

Annexure-10

Revised accession numbers for NCDC cultures

Microorganism	Old Accession No.	New Accession No.
Dahi culture	968	07
Dahi culture	967	11
Enterococcus faecium	965	12
Lactobacillus casei	824	26
Lacticaseibacillus casei ssp. casei	823	27
Levilactobacillus brevis	829	36
Lactobacillus delbrueckii	828	40
Lacticaseibacillus casei ssp. casei	827	41
Aspergillus parasiticus	822	54
Lacticaseibacillus casei ssp. casei	821	63
Lacticaseibacillus casei ssp. casei	825	98
Lacticaseibacillus paracasei ssp. paracasei	812	140
Lactiplantibacillus plantarum	802	190
Lactobacillus brevis	830	28
Desulfotomaculum riminis	955	65
Leuconostoc mesenteroides ssp. mesenteroides	956	58
Pediococcus pentosaceus	946	195
Lacticaseibacillus casei	826	78
Lacticaseibacillus casei	820	80
Lacticaseibacillus casei	821	63
Lacticaseibacillus casei	825	98
Lacticaseibacillus paracasei	819	92
Lactococcus lactis ssp. lactis	952	99
Lactococcus lactis ssp. lactis	951	107
Lactococcus lactis ssp. lactis	950	113
Lactobacillus paracasei	818	118
Lacticaseibacillus casei	817	121
Lacticaseibacillus casei	816	126
Lacticaseibacillus casei	815	131
Lacticaseibacillus casei	814	132
Lacticaseibacillus casei	813	136
Lacticaseibacillus paracasei	812	140
Lactobacillus casei	811	142
Lactobacillus paracasei	810	154
Lactococcus lactis ssp. lactis	949	155
Lactobacillus casei	809	170
Lactobacillus casei	808	171
Lactobacillus casei	948	175
Lactobacillus paracasei	807	176
Lactobacillus paracasei	806	178
Lactobacillus casei	805	179
Lactobacillus casei	804	181
Pediococcus pentosaceus	947	182
Lactobacillus plantarum	803	183
Lactobacillus delbrueckii	801	194
Lactococcus lactis ssp. lactis	945	37

Lactobacillus fermentum	800	210
Salmonella typhi	799	113
Pediococcus pentosaceus	944	225
Lactobacillus delbrueckii	797	218
Lactobacillus fermentum	796	220
Lactobacillus fermentum	795	222
Pediococcus pentosaceus	944	225
Lactobacillus plantarum	794	227
Lactobacillus delbrueckii	793	228
Lactobacillus delbrueckii	792	229
Lactobacillus delbrueckii	791	230
Lactobacillus delbrueckii	790	234
Lactobacillus delbrueckii	789	235
Lactococcus lactis ssp. Lactis	943	238
Leuconostoc mesenteroides ssp. mesenteroides	942	241
Lactobacillus delbrueckii	788	247
Lactobacillus fermentum	787	248
Lactobacillus fermentum	786	250
Lactobacillus fermentum	785	251
Lactobacillus plantarum	941	252
Lactobacillus fermentum	784	254
Lactobacillus fermentum	783	255
Lactobacillus plantarum	940	258
Lactobacillus fermentum	782	264
Lactobacillus fermentum	781	265
Lactobacillus delbrueckii	780	271
Lactobacillus casei	779	272
Lactobacillus plantarum	939	276
Pediococcus pentosaceus	938	287
Leuconostoc mesenterodes ssp. mesenteroides	937	294
Lactobacillus delbrueckii	778	295
Lactobacillus fermentum	777	301
Pediococcus pentosaceus	936	305
Lactobacillus delbrueckii	776	307
Lactobacillus delbrueckii	775	317
Lactobacillus fermentum	774	320
Lactobacillus fermentum	773	321
Pediococcus pentosaceus	935	322
Pediococcus pentosaceus	934	331
Pediococcus pentosaceus	933	332
Lactobacillus sp.	932	333
Lacticaseibacillus paracasei	931	335
Lactococcus lactis ssp. Lactis	930	336
Lactococcus lactis ssp. Lactis	929	337
Lactococcus lactis ssp. Lactis	928	338
Lactococcus lactis ssp. Lactis	927	339
Lactococcus lactis ssp. Lactis	926	340
Lactococcus lactis ssp. Lactis	925	341
Lactococcus lactis ssp. Lactis	924	355
Lactococcus lactis ssp. Lactis	923	360
Lactococcus lactis ssp. Lactis	922	362

Lactococcus lactis ssp. Lactis	921	363
Lactococcus lactis ssp. Lactis	920	393
Lactococcus lactis ssp. Lactis	919	404
Lactococcus lactis ssp. Lactis	918	409
Lactococcus lactis ssp. Lactis	917	418
Lactococcus lactis ssp. Lactis	916	431
Lactococcus lactis ssp. Lactis	915	432
Lactococcus lactis ssp. Lactis	914	434
Lactococcus lactis ssp. Lactis	913	448
Lactococcus lactis ssp. Lactis	912	449
Lactococcus lactis ssp. Lactis	911	452
Lactococcus lactis ssp. Lactis	910	460
Lactococcus lactis ssp. Lactis	909	465
Lactococcus lactis ssp. Lactis	908	471
Lactococcus lactis ssp. Lactis	907	508
Lactococcus lactis ssp. Lactis	906	518
Pediococcus pentosaceus	905	521
Pediococcus pentosaceus	904	522
Pediococcus pentosaceus	903	527
Pediococcus pentosaceus	902	529
Pediococcus pentosaceus	901	535
Pediococcus pentosaceus	900	536
Pediococcus pentosaceus	899	537
Pediococcus pentosaceus	898	538
Pediococcus pentosaceus	897	539
Pediococcus pentosaceus	896	540
Pediococcus pentosaceus	895	542
Pediococcus pentosaceus	894	546
Pediococcus pentosaceus	893	547
Pediococcus pentosaceus	892	549
Pediococcus pentosaceus	891	551
Pediococcus pentosaceus	890	552
Pediococcus pentosaceus	889	555
Pediococcus pentosaceus	888	557
Pediococcus pentosaceus	887	563
Pediococcus pentosaceus	886	566
Pediococcus pentosaceus	885	567
Pediococcus pentosaceus	884	568
Pediococcus pentosaceus	883	569
Pediococcus pentosaceus	882	570
Pediococcus pentosaceus	881	572
Pediococcus pentosaceus	880	574
Pediococcus pentosaceus	879	576
Pediococcus pentosaceus	878	577
Pediococcus pentosaceus	877	579
Pediococcus pentosaceus	876	584
Pediococcus pentosaceus	875	585
Pediococcus pentosaceus	874	586
Pediococcus pentosaceus	873	587
Pediococcus pentosaceus	872	588
Pediococcus pentosaceus	871	589
Pediococcus pentosaceus	870	612
Pediococcus pentosaceus	869	616

Pediococcus pentosaceus	868	617
Pediococcus pentosaceus	867	618
Saccharomyces cerevisiae	866	622
Kluyeromyces marxianus	865	623
Kluyeromyces marxianus	864	646
Kluyeromyces marxianus	863	647
Kluyeromyces marxianus	862	648
Kluyeromyces marxianus	861	649
Kluyeromyces marxianus	860	650
Kluyeromyces marxianus	859	651
Lactobacillus fermentum	858	652
Lactobacillus plantarum	772	653
Lactobacillus plantarum	771	654
Lactobacillus plantarum	770	655
Lactobacillus plantarum	769	656
Bifidobacterium sp.	768	657
Bifidobacterium sp.	767	658
Bifidobacterium sp.	766	661
Bifidobacterium sp.	765	665
Bifidobacterium sp.	764	679
Bifidobacterium animalis	763	689
Lactobacillus delbrueckii ssp. bulgaricus	761	-
Streptococcus thermophilus	-	712
Lactobacillus delbrueckii ssp. bulgaricus	857	800
Lactobacillus fermentum	856	716
Lactobacillus fermentum	855	717
Lactobacillus fermentum	854	718
Lactobacillus fermentum	853	719
Lactobacillus fermentum	852	720
Lactobacillus fermentum	851	721
Lactobacillus fermentum	850	722
Lactobacillus fermentum	849	723
Lactobacillus fermentum	848	724
Lactobacillus fermentum	847	725
Lacticaseibacillus casei ssp. casei	846	726
Lacticaseibacillus casei ssp. casei	845	727
Lacticaseibacillus casei ssp. casei	844	728
Lactobacillus pracasei ssp. paracasei	843	730
Lacticaseibacillus casei ssp. casei	842	732
Lacticaseibacillus casei ssp. casei	841	733
Lacticaseibacillus casei ssp. casei	840	734
Lacticaseibacillus casei ssp. casei	839	735
Lacticaseibacillus casei ssp. casei	838	736
Lacticaseibacillus casei ssp. casei	837	737
Lacticaseibacillus casei ssp. casei	836	738
Lactobacillus plantarum	835	739
Lactobacillus plantarum	834	740
Lactobacillus plantarum	833	741
Lactobacillus plantarum	832	742
Lactobacillus delbrueckii	831	743
Lactococcus lactis	676	-
Streptococcus thermophilus	699	-
Geobacillus stearothermophilus	328	-

Streptococcus thermophilus	329	-
Streptococcus thermophilus	330	-
Streptococcus thermophilus	334	-
Lacticaseibacillus rhamnosus –RS-12	350	-
Lacticaseibacillus rhamnosus RL-4	354	-
Lactobacillus argentoratensis RZ-18	356	-
Lactobacillus reuteri	953	763
Lactobacillus delbrueckii bulgaricus	954	764
Lactobacillus plantarum	957	765
Lactobacillus reuteri	958	766
Streptococcus thermophilus	959	767
Streptococcus thermophilus	960	768
Kluyveromyces marxiansus	961	769
Kluyveromyces marxiansus	962	770
Kluyveromyces marxiansus	963	771
Kluyveromyces marxiansus	964	772
Lactobacillus johnsonii	966	773
Mucormicrosporus namyshowski	969	774
Rhizopus microsporus	970	775
Lactobacillus rhamnosus	971	776
Lactobacillus fermentum	972	777
Lactiplantibacillus pentosus	-	790
Lactobacillus reuteri	-	791
Lactiplantibacillus plantarum	-	792
Lactiplantibacillus plantarum	-	793
Lactobacillua delbrueckii bulgaricus	-	794
Lactobacillus sakei ssp. sakei	-	795
Lactobacillus rhamnosus	-	796
Lactobacillus fermentum	-	797

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