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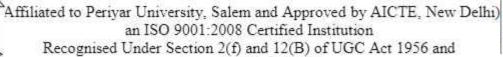
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#### SENGUNTHAR ARTS AND SCEINCE COLLEGE





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#### Purification and Structural Characterization of an Antimicrobial Compound, Lipoxazolidinone a Produced by a Lactobacillus Apis YMP3

#### Dayanidhi Satish Kumar<sup>1,2</sup> and Palanisamy Venkatachalam<sup>1\*</sup>

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http://dx.doi.org/10.13005/bbra/3090

(Received: 16 January 2023; accepted: 07 March 2023)

Strains of Vibrio cholerae are one among the most causative and serious disease causing human pathogenic agents, its infections are caused mostly by ingesting contaminated water and/or food. According to the recent estimates, between 1.3 and 4.0 million individuals are infected all around the world every year. The lactic acid bacteria are an important class of probiotics microbes have their ability to produce diversified bioactive compounds, hence this study focused on the identification of a promising antimicrobial agent from a Lactobacillus apis YMP3. This strain was cultured on MRS broth and the cell free supernatant was ethyl acetate extracted for the antimicrobial agent. The crude extract was further purified with C18 silica gel column chromatography and structurally characterized by FT-IR, NMR, GC and MS/MS spectrum. The chemistry of the compound was confirmed as Lipoxazolidinone A which has the IUPAC name of (2E)-5-butyl-2-[(E)-4-methyl-2-oxoundec-3-enylidene]-1,3-oxazolidin-4-one. This is the first report of Lipoxazolidinone A produced by a bacterium, L. apis YMP3 which was originally isolated from yoghurt. This finding expands the scope of identifying more promising bioactive compounds from probiotic Lactobacillus sp., further, this systematic procedure for purification of this antimicrobial agent stood as the baseline data for more elaborate therapeutic studies in future.

Keywords: Antimicrobial compound; V. cholerae; Lipoxazolidinone A: Lactobacillus apis; Purification; YMP3.

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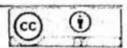
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Antibiotics have historically been derived from natural compounds; therefore, novel scaffolds are typically of interest. Concerns have been raised concerning the potential source of new chemical compound (NCEs) that can address the issue of constantly emerging resistance in the lack of new antibiotics. Till 2002, the vast majority of NCEs

approved for use as antibiotics were derived largely from microorganisms<sup>1,2</sup>. Lactobacilli are essential microorganisms renowned for their fermentative activities as well as their nutritional and physiological benefits<sup>1</sup>. Lactobacilli have traditionally been utilized as natural biopreservatives in food and animal feed viz.,

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#### A Survey on Stable Routing Protocols for Wireless Sensor Networks

<sup>1</sup> M. Manoranjani, <sup>2</sup> Dr. S. Sukumaran and <sup>3</sup>V. Balasubramaniyam
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Abstract— Wireless sensor networks is one of trending technology in wireless communication. A sensor is a device that responds to and detects input from physical or environmental conditions, such as pressure, heat, light, etc. The sensor nodes communicate one another via variety of wireless strategies. These communication strategies are managed by routing protocols. Wireless Sensor Networks Routing Protocols has been classified in three main categories based on routing information, network structure, and protocol operation. Among them, Stable routing protocols maintain consistent and reliable communication paths in a computer network. The idea of this paper is to give a summary of stability-based routing protocols for heterogeneous and homogeneous sensor nodes with its merits and demerits.

Keywords— Wireless Sensor Networks, Routing Protocols, Stability

#### I INTRODUCTION

Sensing is a methodology used to collect data on a physical object or process, such as the occurrence of events (i.e., changes in state like a drop in temperature or pressure). An object which performs these sensing tasks is called as sensor.

Wireless sensor nodes are set of four major components: a computing unit, a sensor unit, a transceiver unit, and a power unit. The sensors connect to controllers and processing stations directly (e.g., using LAN), an increasing number of sensors communicate the collected data through wireless to a centralized processing station. Thus, a Wireless Sensor has not only a sensing component, but also has onboard processing, communication, and storage capabilities. With these enhancements, a sensor node is often not only responsible for data collection, but also for in-network analysis, correlation, and fusion of its own sensor data and data from other sensor nodes. Sensor nodes interacts with each other and also with Base Station (BS)using their wireless radio signals, enables them to transmit their sensor information to distant processing, visualization, analysis, and storage systems. There are two sensor fields which monitors two different geographic regions and connecting to the Internet using their base stations.

Sensors are usually deployed randomly in inaccessible zone; if one of the sensors consumes its energy, replacing the power supply becomes difficult or impossible in some environments, and energy holes emerge. Moreover, the energy of sensor nodes goes down during the transmission of data. Therefore, routing is an important factor in WSNs, and proper selection of effective routing protocols can preserve energy and prolong network lifetime.

For the realization of WSN based applications, many routing techniques have been proposed over the years like Low Energy Adaptive Clustering Hierarchy routing protocol (LEACH), Power Efficient Gathering in Sensor Information Systems (PEGASIS), Sensor Protocol for Information via Negotiation (SPIN), Hybrid Energy Efficient Distributedrouting (HEED). Geographic Adaptive Fidelity routing protocol (GAF), etc.. Since, Wireless Sensors have limited power supply, energy efficient routing remains the major research issue which is been discussed based in the paper based on their stability. On the basis of structure of the network, WSNs routing protocols are broadly categorized into three classes; based on routing information, based on network structure and based on protocol operation.

In WSN's the stable routing methods act a crucial role in maintaining the network's efficiency, reliability, and overall performance. It aims to establish stable routes for data transmission among the sensor nodes while adapting to dynamic network conditions and resource constraints. The metrics, node stability and residual energy, must be taken into account while designing routing protocols that synchronize the tradeoff between the stability of a node and its minimum energy consumption. The unstable routes poses a problem in many network structures such as Internet border gateway routers [14], ad hoc networks, and mobile ad hoc networks [12].

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## RECENT SCENARIO OF PROBIOTICS IN PHARMACEUTICS

P. Venkatachalam<sup>1</sup>, S. Anbumalar<sup>2</sup> and P. Ashokumar<sup>1</sup>

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#### Abstract

Probiotics are defined as the microbial food supplements, which beneficially affect the host by improving its intestinal microbial balance. Probiotics are the health enhancing functional food ingredients used therapeutically to prevent diarrhea, improve lactose tolerance and modulate immunity. They may also have potential to prevent cancer and lower serum cholesterol levels. Lactobacillus, Bifidobacterium and several other microbial species are perceived to exert such effects by changing the composition of the gut microbiota. Probiotics are defined as live non-pathogenic bacteria that beneficially affect the host by influencing the microbiota of the digestive tract. Prebiotics, that are usually saccharides and fiber, represent a source of energy being metabolized by the intestinal and probiotic microbiota. In the last several decades, a rapid enlargement in the use of probiotics/prebiotics occurred for prevention and treatment of diseases in medicine, such as diarrhea caused by certain pathogenic bacteria and viruses, Helicobacter pylori infection, and allergy etc. Rigid evidence supporting the efficacy of probiotics/prebiotics in such clinical uses and mechanical studies are now needed in order to firmly establish them in the modern medicine.

Keywords: Probiotics, Lactic acid bacteria, Lactobacillus, Bifidobacterium, Pharmaceuticals and Pharmacological activity.

#### 1. Introduction

A high ubiquity of depression, anxiety and other disorders has been highly reported in the past decade. Currently, there are many studies and research conducted to understand the origin and mechanism of mental illness and associated



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## 7

# APPLICATIONS OF MICROBIOLOGY

P. Ashokkumar<sup>1</sup>, S. Anbumalar<sup>2</sup> and P. Venkatachalam<sup>1</sup>

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<sup>2</sup>Department of Microbiology, Shri Sakthikailassh Womens College, Tamil Nadu, India.

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#### Abstract

Over decades of years, modernization could be predicted for the use of microorganisms in the production of foods, beverages and other food materials. Presently accelerated pace of new variety of food production is due to the rapid incorporation of biotechnological techniques that allow the rapid identification of new molecules and microorganisms or even the genetic improvement of known species. Currently, beneficial microorganisms such as plant growth promoters and phytopathogen controllers are required by various agricultural crops, and many species are being used as biofactories of important pharmacological molecules. Use of biofactories does not end there: microorganisms have been explored for the synthesis of diverse chemicals, fuel molecules, and industrial polymers and strains environmentally important due to their biodecomposing or biosorption capacity have gained interest in research laboratories and in industrial activities.

Key words: Microbial technology, Recent development, Manufacturing Microbes, Newer

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#### CERTIFICATE OF PUBLICATION

This is to certify that

Dr. P. Venkatachalam1, Dr. S. Anbumalar2 and Dr. P. Ashokkumar3

Assistant Professor in Microbiology<sup>183</sup>
Sengunthar Arts and Science College, Tiruchengode.
Assistant Professor in Microbiology2,
Shri Sakthikailassh Women's College, Salem – 03.
Corresponding Author: venmalar, 2007 are diffmail.com

In recognition of the publication of the Book Chapter entitled "Applications of Artificial Intelligence in Microbiology" Published in Advance Research Trends in Biology (ISBN: 978-93-94638-75-4) (Edition-1: February- 2024).

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#### Publishers:

Thanuj International Publishers, 8/173-B, Vengayapalayam, Rasipuram, Namakkal, Tamil Nadu, India – 637406. E-mail: thanujinternationalpublishers@gmail.com

#### Printers:

Dhazh Computers (Graphic Designer)
No : 442- A, 10th East Cross Street,
Munthirithoppu, Annanagar,
Madurai - 20, Tamil Nadu, India.
E-mail: narennarayanasamy@gmail.com



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## Applications of Artificial Intelligence in Microbiology

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#### Introduction

People frequently associate the term "artificial intelligence" with killer robots and supercomputer overlords. Artificial intelligence undoubtedly carries significant concerns, including the possibility of autonomous weaponry and certain social media functions. However, artificial intelligence is capable of more. The internet, self-driving cars, and healthcare are just a few of the areas in which artificial intelligence has already impacted our lives. Artificial intelligence has also been successfully used in microbiology for a number of purposes, such as drug development, microbe imaging, and diagnostics. Artificial intelligence, like many other inventions, can be used for good or harm. It can relieve us of tiresome and repetitive duties, raise the standard of healthcare, and positively impact our lives.

A wide range of tools and applications are used to create artificial intelligence, which is used to make films like The Matrix and Terminator, in which an intelligent supercomputer hunts and enslaves humanity. Alternatively, they recall films such as 2001: A Space Odyssey and Alien, in which a spaceship's robot turns rogue and chooses to prioritize the mission over the lives of its human crew members.

The general people should be aware of the possible advantages and difficulties of artificial intelligence. Since the last Industrial Revolution, research and technological advancements have not been expected to have a greater positive impact on our lives than artificial intelligence.

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#### Artificial intelligence

The Industrial Revolution has so far taken place three tisescunthar ARTS AND SCIENCE COLLEGE

Technological advancements like the steam engine, which significantly reduced the need for human arm strength and replaced it with machine power,

1 | ISBN: 978-93-94638-75-4

#### WOMEN EMPOWERMENT AND ENTREPRENEURIAL SPIRIT THROUGH MUDRA SCHEME AMONG MICRO ENTREPRENEURS IN TAMIL NADU

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Department of Commerce,
Sri Vaasavi College, Erode
R.U.VIGNESH,

Research Scholar Part Time,
Dept. of Commerce, Periyar University, Salem-11.
Assistant Professor and Head, Dept. of Commerce,
Sengunthar Arts and Science College, Tiruchengode.

#### ABSTRACT

The Prime Minister Mudra Yojana (PMMY) is a positive initiative that aims to meet the credit needs of micro businesses and self-employed individuals, the majority of whom work in the informal sector, and thus remove the most significant barrier to their socioeconomic development, particularly for women entrepreneurs. The objective of the study was carmine the women empowerment and entrepreneurial spirit through MUDRA schemes among micro entrepreneurs in Tamil Nadu. The survey included 350 women micro entrepreneurs from the various Districts of Tamil Nadu who obtained loans through MUDRA scheme were selected using convenience sampling method. The questionnaire consists of questions on demographic profile, ranking question on influence of loans on women participation in economic activities. Statements on social empowerment, financial empowerment, psychological empowerment and entrepreneurial spirit through MUDRA schemes. Percentage analysis, Henry Garrett ranking method, exploratory factor analysis, internal consistency, Reliability and convergent validity test and Confirmatory factor analysis was used to find out performance effectiveness of social empowerment, financial empowerment, and psychological empowerment on entrepreneurial spirit through MUDRA scheme among women micro entrepreneurs.

KEY WORDS: Empowerment, Entrepreneurial spirit, MUDRA, Women micro entrepreneurs. INTRODUCTION

Entrepreneurs contribute significantly to the growth of the economy in India. Specifically, a woman entrepreneur is an individual who accepts a challenging role in order to satisfy her personal needs and achieve economic independence (George & Nalini, 2018)There are approximately eight million women entrepreneurs in India, with Tamil Nadu having the greatest proportion. Women enter entrepreneurship as a result of economic factors that compelled them to be independent and encouraged them to do something on their own(Agarwal & Dwivedi, 2017). Women are motivated to pursue selfemployment due to their preference for working from home, their difficulty in finding appropriate employment, and their need for social recognition. The Indian government has been recognising the significance of women's entrepreneurship and assisting them by introducing new business initiatives (Gupta, Matho, & Dubey, 2017). In India, the government encourages women entrepreneurship by providing simple access to loans, networks, markets, and training ( Matin Chowdhury & Mohd Salleh, 2017). The government of India has taken numerous policy initiatives in support of the growth and development of Micro, Small, and Medium-Sized Enterprises and initiated numerous development programmes to address their problems. In particular, the Pradhan Mantri Mudra Yojana Loan scheme is a central government of India initiative designed to meet the credit-related requirements of women entrepreneurs (Sathiyabama & Velmurugan, 2019). The Pradhan Mantri Mudra Yojana (PMMY) loan

ISBN: 978-93-94293-22-9

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Sengunthar

Prof., Arts. And. Science Collegenas actively participated/ Presented a paper entitled Mudra Scheme Among Miczo Entrepreneurs In Jamil Nadu Women Empowerment And Entrepreneurial Spirit Through

in the One Day International Conference on "GLOBAL BUSINESS, ECONOMICS,

INANCE AND SOCIAL SCIENCES" held on 26" September 2023.

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#### PERCEPTION, AWARENESS AND ATTITUDE TOWARDS MUDRA SCHEMES AMONG MICRO ENTREPRENEURS IN TAMIL NADU

Dr. P. Tamilselvan,

Assistant Professor and Research Supervisor, Department of Commerce, Sri Vaasavi College, Erode

R U Vignesh,

Research Scholar Part Time, Dept. of Commerce, Periyar University, Salem-11. Assistant Professor and Head, Dept. of Commerce, Sengunthar Arts and Science College, Tiruchengode.

#### ABSTRACT

Entrepreneurs are playing a crucial part in the growth of the economy in India. The Government of India has been taking into consideration the significance of micro entrepreneurship and has been assisting entrepreneurs by providing them with new programs that are tailored to their businesses. In India, the government encourages micro entrepreneurship by making it simple to gain access to funding, business networks, consumer marketplaces, and educational opportunities. This study aims to assess the perception, awareness and attitude towards MUDRA schemes among micro entrepreneurs in Tamil Nadu. The secondary objectives were to find out the source of investment made in the business, reasons for obtaining loan through MUDRA scheme. The samples were taken from various districts in Tamil Nadu. Three hundred micro entrepreneurs actively participated in the survey. Well-structured questionnaire used to collect responses. Research model and Hypotheses developed for the study and tested using Structural Equation Modelling (SEM). Percentage analysis, Exploratory Factor analysis and Henry Garrett ranking method also used in this study. Perception has a positive impact on attitude and significant and Awareness has a positive impact on attitude and significant. Hence both the hypotheses were supported in this study. In Tamil Nadu, the micro entrepreneurs have more awareness about MUDRA schemes. The micro entrepreneurs have high level of perception and attitude towards MUDRA scheme. The micro entrepreneurs' perception, awareness and attitude on the Mudra scheme have made significant improvement in their business activities.

KEY WORDS: Attitude, Awareness, Micro entrepreneurs, MUDRA scheme, Perception.





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has actively participated in the

International Conference on

"HUMANITIES, SOCIAL SCIENCE & BUSINESS MANAGEMENT (ICHSBM)"

held at AVS College of Arts & Science on 25th August 2023

and Presented a paper entitled PERCEPTION .. AWARENESS .. AND ...

PATHODE TOWNEDS MUDRA SCHEMES AMONG MICRO ENTREPRENEURS

#### From

Dr P. Venkatachalam Head cum Assistant Professor. PG and Research Department of Microbiology, Sengunthar Arts and Science College, Thiruchendgode -636205

The Colemporalest Die The Dean Man

To

The Principal, Sengunthar Arts and Science College, Thiruchengode-636205

Sub: Permission to visit Aavin Dairy Plant, Salem-reg (SDCMPU Ltd., Salem, Visit of Salem Dairy Permission Granted)

#### Respected Sir,

As per our request, we got permission to visit Aavin Dairy Plant, Salem on 16.08.2023 at 10.00 am to 1.00 pm for 55 Nos (53 Students and 2 Staff). So I kindly request you to grant me permission to visit the Dairy Plant and also provide the transport facilities for the same.

Thanking you,

Place:Tiruchengode Date 08.08.2023

Enclosure: Permission letter from (Deputy General Manager) Aavin Dairy Plant, Salem permission granted



#### The Salem District Co-op. Milk Producers' Union Ltd., Sithanur, Thalavaipatti Post, Salem- 636 302 (TN)

Phone: 7373704802

E-Mail :aavinslm@gmail.com

Ref.No: 04860 /Dairy Visit /DGM [P]/2019

Date: 04-08-2023

to

The Principal,

Sengunthar Arts and Science College,

Tiruchengode Cell: 9842574782

Sir.

Sub:

SDCMPU Ltd., Salem-Visit of Salem Dairy-Permission - Granted.

Ref: No:

13320/M/M4/2016, dated, 21-03-2022 of General Manager,

SDCMPU Ltd., Salem.

Permission is granted to 55 Nos of students and Staff of your College / School to visit our Dairy on 16-08-2023 by 10.00 A.M. To 1.00 P.M.

Kindly arrange to depute sufficient number of your staff to take care of the students during the visit of the Plant. Both the staff and students may be advised to observe the Dairy operations without any disturbance to the routine works of the Dairy. Further the students should be advised not to mishandle any products or articles inside the Dairy. No photographs should be taken inside the Dairy.

It is hereby informed that ₹ 135/- [Rupees one hundred and Thirty five only] per head must be paid (including Teaching Staff) at Marketing Section. For ₹ . 135 /- they will be given Lunch, one 50 Grm Khoa and one Milk Shake (200 ml).

Kindly advise the students to discard the wastes in the dustbins only.

for Salem Dist Co-op. Milk Producers' Union Ltd.,

Encl.: Visitor Health Questionnaire Form.

Deputy General Manager (Production)

Copy to:

1. The A.G.M. (Dairying), FBD, Salem

2. The A.G.M. [Mkg], Salem.

3. The Security Officer.

Aavin Canteen in-charge. (9443219691)

(By giving the assurance, we prepared for lunch but in case if you failed to attend the IV. The food amount will be reimbursed by the concerned college)

Copy submitted to: The General Manager,

for kind information please.

Certain information for Advance Booking

1). Aavin Parlour at Salem Dairy (96296 23749)

Cone Ice Cream, Khoa, Mysorepa, Badam Mix Powder, Butter (500 Grm

pack), Ghee (200 ml, 500 ml, 1Lit, 5 Lit)

Tetra Products: Chocolate Milk, Strawberry, Cardamom, Mavin, 1 Lit. STD Milk, 1 Lit. Toned Milk, ½ Lit. Fino.

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Dr. S. RAVIKUMAR M.Sc., M.E., M.Phil., Ph.D.,

Date:

11.08.2023

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#### TO WHOMSOEVER IT MAY CONCERN

The following students of our institution are on INDUSTRIAL VISIT to Aavin Dairy Plant, Salem on 16.08.2023 and they are accompanied by our staff members

S.No	Programme	Rell No	Name of the Student
1		21B703	Chellaperumal M
2		21B705	Dinesh R
3		21B707	Gopinath T
4		21B708	Hariprakash A
5		21B709	Jena V
6		21B710	Kavin M
7		21B712	Myilarasan B
8		21B714	Praveenkumar M
9		21B715	Priyadharshan M
10		21B716	Sabarinathan G
11		21B719	Senthilnathan K
12		21B721	Symon Bovas R
13		21B722	Tharaneesh M
14	III B.Sc Microbiology	21B724	Vishwa K
15		21B725	Abinaya P
16		21B726	Abirami S
17		21B727	Bhuvanasankari S
18		21B728	Dhivya R
19		21B731	Kiruthika G
20		21B732	Mohanapriya D
21		21B733	Nivetha C
22		21B735	Ramya V
23		21B736	Ramya C
24		21B738	Sasi M
25		21B739	Shankaripriya G
26		21B740	Sneka S
27		21B741	Sowmiya K
28		21B744	Swetha M
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	35		22UMB723	Kaviya K
	36	1	22UMB729	Niranjana P S
	37		22UMB731	Sandhiya C
-	38		22UMB732	Santhiya K
-	39	1	22UMB733	Santhiya R
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	47	22PAM1110	Ponvalavan P	
	48	II M.Sc Microbiology	22PAM1113	Abinaya R
	49		22PAM1115	Archana A
	50		22PAM1116	Devayani S
	51		22PAM1118	Kiruthika R
	52		22PAM1121	Vijayalakshimi S

Staff members

- 1. Dr. P. Ashokkumar
- 2. Dr. S.Navamani
- 3. K.P.Gopal

Date: 11.08.2023

Place: Tiruchengode

Principal PRINCIPAL, SENGUNTHAR ARTS AND SCIENCE COLLEGE TIRUCHENGODE - 637 205,

#### SENGUNTHAR ARTS AND SCIENCE COLLEGE

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#### Exposure and field visit for problem identification

Microbiology Department students visited the Aavin Dairy, Salem on 16.08.2023. Mr A. Veerakumar Technical Assistant of the dairy plant take all our students (No.54) to various processing unit (Milk collection, Ghee, Butter, Milk powder preparation, Pasteurization process the point which were create the problem to spoil the milk and milk products and Waste water plant etc.,) explained well. Our students are learned about Daily functions of Dairy in the on-site visit.



Industrial Visit to Aavin Dairy Salem, 16.08.2023



Visit Ghee preparation at Aavin Dairy Salem, 16.08.2023

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