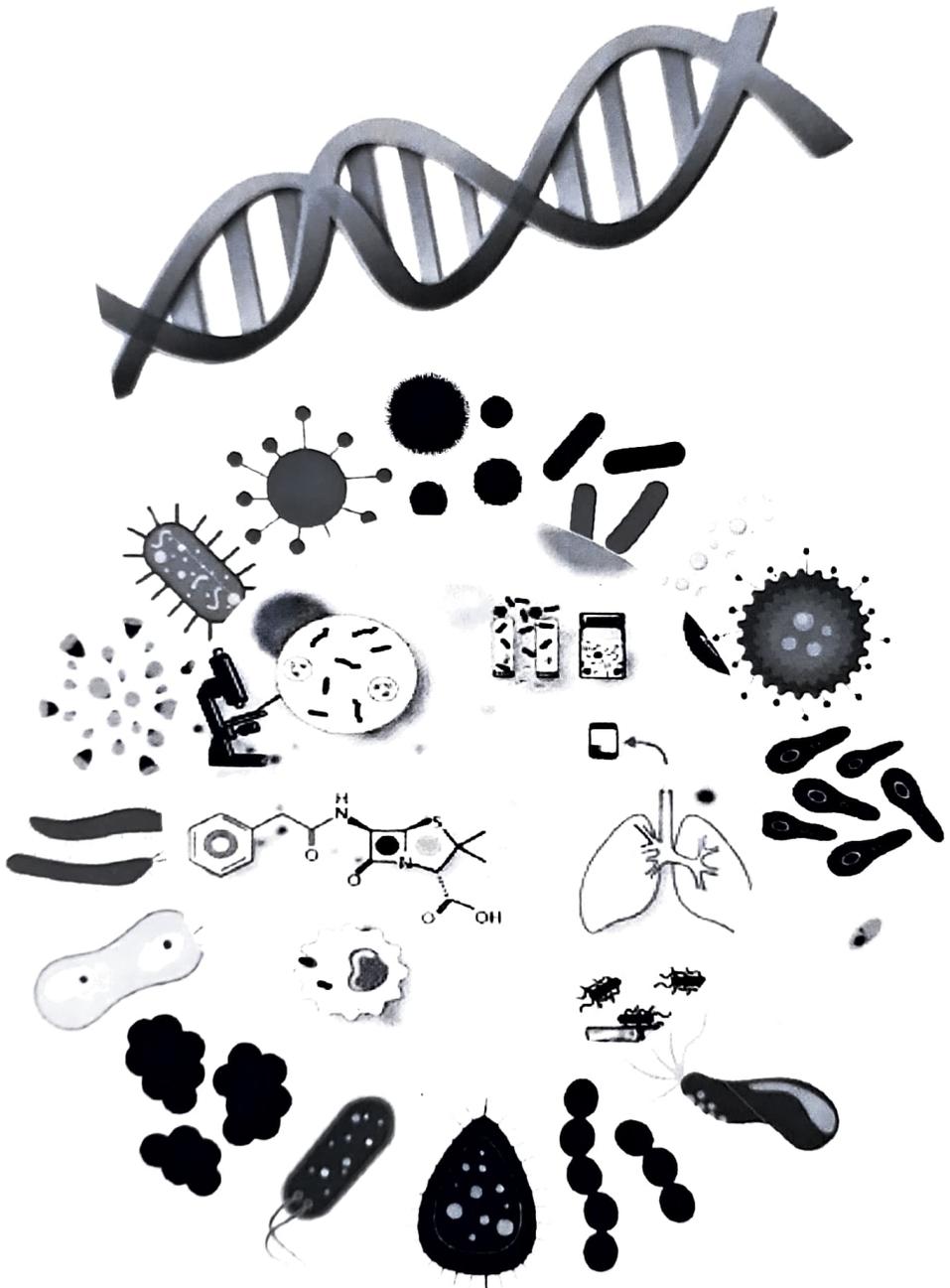


### 3.3.3.

BOOKS AND CHAPTERS IN  
EDITED VOLUMES/BOOKS  
PUBLISHED AND PAPERS  
PUBLISHED IN NATIONAL/  
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CONFERENCE  
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# Microbes in Our Life



**Edited by :**  
**Department of Microbiology**  
**Vijaygarh Jyotish Ray College**  
**In Collaboration With :**  
**Kalyani Foundation For Media Sciene & Community Research**  
**Kolkata, West Bengal, India**

## **Microbes in Our Life**

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# Quorum Sensing – Its Role In Bacterial Biofilm Formation

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**Abstract :** Quorum sensing (QS) is a bacterial gene regulatory mechanism through cell-cell communication system that has the ability to detect and respond to population density. Chemical signal molecules called autoinducers, such as acyl-homoserine lactone, play crucial gene regulatory roles in QS that leads to increase in cell density. Generally, autoinducers are species specific. However, auto inducer like AI-2, first identified from bioluminescent marine bacterium *Vibrio harveyi*, is also produced by many bacterial species and serves as a 'universal' signal molecule for inter-species communication. Beside controlling downstream production of virulence factors, autoinducers are also found to control biofilm formation which in turn contribute towards colonization in the host body by pathogenic organisms, leading to manifestation of diseases. Therefore, a thorough study is going on about different QS mechanisms and their role in biofilm

# **Pasteurized Milk – A Good Source of Nutrition- A review**

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Milk has been the most widely consumed ideal liquid food source for humans since ancient times. The nutritional value of milk also is highly complex, and it contains almost every single nutrient that our body needs. The milk also contains various types of micro-organisms that may be harmful to humans. The consumption of raw milk reported several kinds of diseases like diphtheria, typhoid, tuberculosis, and brucellosis to human being so the raw milk needs to be Pasteurized before consumption. Pasteurization processes are specifically implemented to reduce the potential risk to consumers of illness due to pathogens that may be present in raw milk. But during the pasteurization process, the nutrition value has to be sacrificed at some level. Studies showed that this process deactivates the enzymes that are necessary for the human digestion of milk, kills off the good bacteria that may be beneficial to the human body, alters the calcium content and removes most of the vitamin C in raw milk. Studies also showed that some pathogenic microbes which have high risk of causing diseases are still present in Pasteurized milk.

# Antimicrobial Activity of Some Common Plants

Urmi Roy

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**Abstract :** Antibiotics provide protection against microbial (bacterial and fungal) infections. There is an increased need to discover new antimicrobial compounds with diverse chemical structures and mechanisms of action. Another big concern is the development of drug resistance to human pathogenic bacteria all over the world.

Higher plants produce hundreds to thousands of Chemical compounds with different biological activities. Plants produce different antimicrobial compounds which are active against different pathogenic microorganisms. This review works have been done to see the antimicrobial effects of some common plants extracts.

**Key Words :** Antimicrobial activity, Phyllanthus Niruri, Phyllanthus Emblica, Aloe Vera, Medicago Falcata, Cinnamomum Cassia, Azadirachtaindica, Aegle Marmelos.

# **Isolation of Amylase Producing Organisms From Soil and its Whole Cell Immobilization**

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**Abstract :** Amylase is an enzyme that hydrolyses starch into monomeric compounds, the smallest being glucose. Amylase has multiple applications in various industries like food, fermentation, textile, paper and pharmaceutical. Immobilization is the term that expresses something immobilized or fixed. The process involves the immobilized biocatalyst, enzymes or cells that are physically fixed in a defined region for catalysing a specific reaction with no loss of catalytic activity and with repeated use. Immobilization finds extensive use in food industry mainly for starch processing. Other than food industry, immobilization technique finds tremendous applications in pharmaceutical and biochemical

# **A Study on the Effect of Cigarette Smoking on Human Sperm Quality in Kolkata, West Bengal, India**

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**Abstract :** Sexual reproduction is the only way to ascertain the persistence and propagation of a species. In humans, male factors contribute to almost 50% of infertile couples while remaining causes may be either due to female factors or a combination of both. Several reports have suggested that urban lifestyle features like cigarette smoking, stress level, aging etc. add up to the complications regarding fertility issues. The highest prevalence of smoking is observed in young males during their reproductive period and found to affect reproductive health more than consumption of caffeine or alcohol. In this study efforts have been made to explore the effects of smoking on the urban male fertility within this age group by semen analysis with additional emphasis on whether the parameters are age dependent or not. Male population sampling was performed in and about the city of Kolkata with specific

# **Analysis of Cellulolytic Activity of Heavy Metal Tolerant Bacteria Isolated from East Kolkata (Dhapa) Dumping Grounds**

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**Abstract** : Organic carbonaceous materials in soils mainly include cellulose, hemicelluloses and lignin chiefly obtained from dead and decayed plant parts. Cellulose account between 30 to 60% of plant material (dry wt.), and its decomposition is of major importance to the biogeochemical cycling of carbon (C) and essential plant nutrients. Soil organisms in concert produce cellulolytic enzymes that degrade cellulosic polymers. The enzyme system, collectively known as cellulases, breaks down insoluble cellulose molecules into simple water-soluble mono- or disaccharides that can be transported into the cell. Once inside the cell, these simple sugars are oxidized to provide energy and to biosynthesize microbial biomass. Like various microbially regulated ecological process, cellulose

# **Community Genomic Analysis Dissimilatory Arsenate Reducing Bacteria in Aquifer Sediments of Bengal Delta Plain**

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**Abstract :** Contamination of groundwater with geogenic arsenic poses a major health risk to millions of people throughout the world. Microbial communities in sediments have often been associated with release of arsenic from sediments into ground water. Among various group of microbes, dissimilatory arsenate reducing bacteria (DARB) are considered to be primarily responsible for arsenic mobilization in anaerobic environments of deep underground aquifer sediments. These group of microbes carries out enzyme catalyzed conversion of more immobilized and less toxic arsenate [As (V)] to more soluble and more toxic

# Isolation of Zinc ( $Zn^{+2}$ ) Resistant Bacteria from Tannery Effluent of Topsia

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**Abstract :** Heavy metal contamination by industrial waste is becoming a global issue as the heavy metals, present in high amount in industrial waste are very reactive in low concentration and causing a severe health problem. This study has focussed to the isolation of Zinc ( $Zn^{+2}$ ) microorganism from tannery effluent of Topsia. Generally  $Zn^{+2}$  is a good nutrient at very low concentration. The result showed that at very low concentration  $Zn^{+2}$  enhanced the growth of the isolated microorganism, but at higher concentration of  $Zn^{+2}$  microbial growth was inhibited. Amount of  $Zn^{+2}$  absorption was measured. Biochemical characteristics of the isolated microorganism were also determined. The result of  $Zn^{+2}$  resistance of the isolated microorganism can explore the avenue of bioremediation against  $Zn^{+2}$ .

**Key Words:** Microorganism, Zinc, Bioremediation

**Introduction :**

Tannery waste water generally contains high concentration