



A Review: Several Roles of Bacteria in Human Life Department of Biotechnology

Abhishek Uniyal, Pramod Joshi, Priyanshi Sharma, Himani Rawat

Shri Guru Ram Rai University, Dehradun, Uttarakhand

Corresponding Author name: Abhishek Uniyal {M.sc. Biotechnology, Shri guru Ram Rai University, Dehradun-248001, Uttarakhand, India

Email.id: Uniyalabhishek180@gmail.com

ABSTRACT

There are millions of known bacterial species found on earth, and many species are yet to be discovered. Apart from all the species which are classified or we can say the species which are identified and had given name according to the nomenclature rules. We can categorize them into two basic categories the Good bacteria and the Bad bacteria. The Good Bacteria are those which are beneficial for the human kind and on the other hand bad bacteria are those which are harmful for the individual or the person who consume them, or comes in contact with them. Example of good bacteria are LAB (lactobacillus bacteria). This bacteria produce lactic acid which convert the milk into curd. And curd have many advantages in itself. On the other hand the example of bad bacteria is salmonella typhi, which causes the typhoid in the human beings. And we can test this bacteria by the help of antigen antibody kit, and called the test widal test. Just like this there are so many other bacteria also which are very much harmful for the human population. But now with the help of Biotechnology and its associated field we can convert any harmful bacteria into a bacteria of our own interest which are beneficial for the human population.

INTRODUCTION

According to *Brand, 2010*

“If you don’t like Bacteria, you are on the wrong planet”.

It is the summarizes the solid facts, fascination and knowledge that we share with concern to the smallest and general type of organisms on the earth. Bacteria are not only crib of life but are considered those living organisms, which affected human beings mostly.

From the time, Antonie van Leeuwenhoek recognized the bacterial cells under the microscope, until the progressive projects on the human microbiome, it has been an exciting journey of figure out, fight, and using bacteria for human benefit. A lot of time we humanization to the study of our subjects, which is not necessary a mistaken practice if we are aware of our works and our conclusion, thus we categorized bacteria by artificial way into “beneficial or pathogenic” in unequal ratio. However, to gaining the knowledge with many years, we also in under this belief that it also mysterious whether we can thought the bacteria as “Beneficial” or “Harmful” that co-habits with human.

In many Researches, Scientists have tried to combine many different outlook of bacterial world, and also tried to show how these bacteria strongly affected to our daily lifestyle. Obviously we know that drawing lines is a risky task, because what we do when a “Good” change itself into “Bad”? Enterococci are a good example which are member of our gut microbiome, it can convert into Bad in certain conditions (low immune response on their host, humans). Being scientists and trying to leading the present Research, we take the scientific way to solve this complex tasks, present facts and find conclusion and this helps to make readers easily to gain the knowledge about the role of bacteria in human life.

First and the most important Molecular biology would not be there, where it exist today, it were not for the basic knowledge about the blocks of life, i.e. RNA, DNA and proteins, and of gene expression and its control, horizontal gene transfer, cell to cell communication, Cell division and DNA replication, DNA repair, and cell death, cell immunity, that were acquired to the study of bacteria. However these all processes are comparatively easy to measure in bacteria, and it is the most common principle of biological control being same in all organisms. It has become even more benefiting biological sciences as a whole (including the emerging field of molecular medicine such as biotechnology) due to the study bacteria. In these, phages and plasmids i.e. the bacterial mobilome, play a crucial role. Phages and plasmids were not only main platform of the biological discoveries, but they are also large tool for delivery of gene in all the organisms and principal reason for the spread of resistance antibiotic that affected the economy as well as human life. Because most of bacteria that are devious pathogens live symbiotically with plants or inhibit polluted environments, take plasmids with genes for inhibition or production of a particular enzyme.

In biotechnology, the uses of bacteria is covered by a large-scale analysis on bacterial stationary phase promoters and uses for establishing of developed gene-expression systems in production of recombinant protein and in the bio-remediation processes (Srivastava and Jaishankar).

The role of the bacteriophages (bacterial viruses), in the rapid diffusion of antibiotic resistance is presented by scientist Valero Rello et al., whereas in increasing the mortality and morbidity of infection such as influenza, especially during pandemics and epidemics. The increasing resistance of antimicrobial and vaccine evasion represented by these bacterial pathogens have builded it even more essential to monitor their epidemiology to guide

better clinical treatment and development particularly during pandemic or epidemic of influenza.

In other analysis, Sahan et al. expose how pathogenic microbes can induce different levels of inflammation which can control DNA damage, thereby a risk for the development of cancers. This analysis focuses on the bacteria namely *Helicobacter pylori* mediated gastric cancer, inflammation as well as the role of *Fusobacterium nucleatum* in colorectal cancer indicating the essential role of DNA repair pathways in inhibiting the development of such cancers.

The molecules that are capable to inhibit conjugation (COINS) have been thought and proposed to provide a novel avenue to combat spread of antibiotic resistance traits coded by mobile elements. Another viewpoint to deal with pathogens is generally related to the interrupting of their lifestyle. Most of bacteria (and the bad ones) grow happier when they grow simultaneously with forming biofilms.

The use of different bacterial species in cancer therapy is audit in a perspective article by Gabriela Kramer. Bad side of other species of bacteria that have been shown to be causal agents for cancer- "Sahan et al".

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