American Journal of Biomedical Science & Research

www.biomedgrid.com

ISSN: 2642-1747

Review Article

Rapacious Bacteria and Their Growth Mechanism in Living Cells

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To Cite This Article: *Nagham Mahmood Aljamali, Entzar JabbarJasim, Thanaa A Helal. Rapacious Bacteria and Their Growth Mechanism in Living Cells. Am J Biomed Sci & Res. 2022 - 16(1). AJBSR.MS.ID.002189.* DOI: 10.34297/AJBSR.2022.16.002189

Received: March 23, 2022; **Published:** April 07, 2022

Abstract

Rapacious bacteria have many promising applications in health and the environment., The Rapacious bacteria were discovered by chance, as scientists stumbled upon them more than half a century ago while searching for another type of killer microbe called a bacteriophage, or a virus that can infect and kill bacteria. Before that, says Dr. Laura, "it was not known that bacteria preyed on other bacteria in this way." These Rapacious bacteria that have eluded detection for so long are somewhat surprising. The seas and mounds of dirt teem with dozens of species, and they are thought to be strong enough to hold up the guts of animals, including ours, and seem to be found everywhere from raw sewage to the gills of crabs. But phages and predatory bacteria are completely different monsters. Phages tend to target a narrow range of hosts, while many predatory bacteria are less content.

Keywords: Rapacious Bacteria; Halo Bacteria; Antibacterial; Microbes; Chemical Antibacterial Compounds

Introduction

In a laboratory encounter between two cells of bacteria: a vibrio coralliilyticus, a large rod-shaped marine microbe, and a very small microbe, Halo bacterio vorax, the tiny microbe grabbed the larger bacteria. In a lengthy report published on the New York Times website on August 25, the writer "Catherine J. Wu" deals with this confrontation that took place in an American academic laboratory [1].

Rapacious bacteria: The researchers say that the desperate Vibrio bacteria sought to get rid of their attacker, writhing and spinning in a pool of liquid, meandering in the absurd before finally reaching a "glaring stop" as described by Dr. Laura Williams, a microbiologist at Florida A&M University. Then the halo bacteria got their act together: piercing the outside of the vibrio and beginning to penetrate the inner cavity, where it would sink into the guts of its host, replicating itself several times and set off freely to find its next meal. These Rapacious bacteria hold tremendous promise of remarkable practical applications [2]. They can help people overcome harmful microbes in the environment, or cleanse pathogens from the food supply. Some experts believe it could one day serve as a kind of live treatment, helping to remove drug-resistant germs from patients for whom all other treatments have failed [3,4]. To use this group of microbes as a live antibiotic, "we need to know how it grows [because] we can't use it if we don't understand it," says Terence Sacchi, a microbiologist who studies Rapacious bacteria at Belgium's de Duve Institute [5-8].

Proliferation of Predacious Bacteria

Some predatory bacteria are capable of eating dozens or even hundreds of bacterial species, enabling them to thrive in most habitats. While phages work quickly, within hours, predatory bacteria multiply, sometimes taking weeks to grow in the lab. However, its predatory lifestyle is so productive that it seems to have evolved more than once. Overall, predatory bacteria are "very effective killing machines," says Daniel Kaddouri, a microbiologist at Rotgers University who has studied predatory bacteria since 2003 [9-12]. Predatory bacteria are not exclusively weapons of destruction. In Germany, Dr. Jonke is working on a series of projects that highlight the peacemaking skills of microbes in the complex community of bacteria that live in the gut [13]. She says some evidence suggests that "healthy humans usually have predatory bacteria" as part of the naturally coexisting bacterial community. She added that little is understood about her role. But you'll probably keep order in the gut and ensure no one goes out of style. Dr. Jonke's work suggests that people with digestive disorders may have lost this delicate balance. Reintroduction of predatory bacteria into the human body's bacterial system may help restore it [14-20]. "In my ideal world, we could use predatory piercing bacteria as a kind of microorganism," Junki said. It is also possible that a similar dynamic will be used in nature, where Dr. Williams has turned most of her attention to this, as even trace amounts of predacious bacteria can completely reorganize the microbial organelles of a sample of seawater. Some types of bacteria kill and then consume other microorganisms, and these types are called predatory bacteria [21-25]. This type includes organisms such as M. xanthus, which form swarms of cells that kill and engulf any bacteria they encounter. Another type of predatory bacteria attaches itself to its prey, digests it, sucks nutrients from it like sucking insects, or invades another cell and multiplies within the Daptobacter cytosol. It is believed that these predatory bacteria evolved by ingesting scavengers that consumed dead microorganisms through adaptations that allowed them to entrap and kill other organisms.

Certain bacteria form closed spatial assemblies and are essential for their survival [26-30]. One such mutualistic grouping, called interspecific hydrogen transfer, occurs between groups of anaerobic bacteria that consume organic acids such as butyric acid or propionic acid and produce hydrogen, and methanogenic archaea that consume hydrogen [31-35]. Bacteria in this community are unable to consume organic acids as the reaction and produce hydrogen that accumulates in the surrounding environment. The hydrogen concentration is kept low enough to allow bacteria to grow only if there is a strong bond with the hydrogen-consuming archaea [36-40]. In the soil, the microorganisms present in the root zone (the area that includes the surface of the root and the soil that holds the root after gently shaking it) carry the fixation of exogenous nitrogen and the conversion of nitrogen gas into nitrogenous compounds [41,42]. This works to make it easier for many plants to absorb nitrogen that they cannot fix nitrogen themselves [43-46]. Many other types of bacteria are found coexisting in humans and other living organisms, for example, there can be more than 1000 types of bacteria in the body's natural intestinal flora in the human intestine, which increases the immunity of the intestine, and also manufactures vitamins such as folic acid and vitamin K and biotin convert sugar into lactic acid (see Lactobacillus), plus they ferment whole carbohydrates.The presence of the gut flora in the intestine inhibits the growth of pathogenic bacteria (usually through competitive exclusion) and thus beneficial bacteria are sold as nutritional supplements and probiotics [47-50].

The effect of Predacious Bacteria on the immune System

In animal studies, predacious bacteria have shown promising results in targeting disease-causing germs such as salmonella and Yersinia pestis that cause plague. Dr. Kaddouri and Nancy Connell, a microbial geneticist at the Johns Hopkins Center for Health Security, administered a dose of the bacterium Bdellovibrios into the lungs of rats and mice, and watched them devour most of the prey. The predacious bacteria are not interested in the non-microbial cells, and they do not appear to provoke the immune system even when placed directly on the surface of the rabbit's eyeball [51-54]. Dr. says. Kaddouri says this indicates that these microbes can be safe for use in humans, as "we have pushed a lot of predacious bacteria into animals and have never seen an aggressive immune response." But these predacious thrive only in the presence of their prey, so they usually struggle to conquer entire populations of microbes on their own. Being microbes, they are eventually removed from the body by immune cells, which "have absolutely no defense," Dr. Connell said. As a result, predacious bacteria are not strong candidates for treating infections that have already spread throughout the body [55]. However, predacious bacteria, when managed the right way, may be persuaded to act in concert with the immune response to eliminate their targets. They can also be combined with another treatment such as an antibiotic or even a low dose of phages. Dr. says. Kaddouri "We need to start thinking about comprehensive methods. It's another tool in the arsenal" [56-59].

Bacterial Cultures in Laboratories

One of the most well-known predatory bacteria is Bdellovibrio bacteriovorus, which preys on the victim bacteria, by implanting itself between the inner and outer cell membranes of the host, and then begins to multiply. Bdellovibrio bacteriovorus has not been known to cause disease in humans, but it is a known pathogen of Gram-negative bacteria, making it a potential biological control option for many human pathogens. Among the contributions of these bacteria in the field of biotechnology is their use in some water treatment plants to reduce the proliferation of Gram-negative bacteria in water. In agricultural terms, it has been used to reduce the spread of plant pathogens in some crops. It should be noted that the use of (Bdellovibrio bacteriovorus) in agriculture requires extensive knowledge of the crop and its environment, because it may attack some types of Gram-negative bacteria such as (rhizobacterias) necessary to promote the growth of some crops. Another species of predatory bacteria is Micavibrio aeruginosavorus, which, unlike Bdellovibrio bacteriovorus, does not immerse itself in the space between the inner and outer cell membranes of the host, but rather preys on it by attaching to its surface, then behaves like a vampire, killing it after filtering its fluids (leaching) [60]. Micavibrio aeruginosavorus has shown superior abilities to kill bacteria in the form of cell membranes (biofilms), which are more than a thousand times more resistant to antibiotics and antiseptics than microbes in their single form. Bacteria often function as a group of multiple cells known as biofilms, exchange a variety of molecular signals for internal communication between cells, and are preoccupied with regulating multicellular behavior. General benefits of multicellular cooperation include cell division to function, access to resources that it cannot be utilized efficiently by monocytes, collective defense against adversaries, and finally, improved population presence by offshoring and the creation of distinct and different cell types [61-63]. For example, bacteria in biofilms can resist 500 times more germs than individual planktonic bacteria of the same species. One type of intercellular communication by molecular signaling is called quorum sensing or quorum detection, which provides the reason for determining whether or not the local population density is present (which is high enough for production and investment in procedures or processes that only succeed if a large number of the same organisms act in the same manner only, as in secreting digestive enzymes) or emitting light. Quorum detection allows bacteria to coordinate gene expression, production, editing, and detection (self-inferred) or pheromones that accumulate with growth in cell proliferation [64] (Figure1).

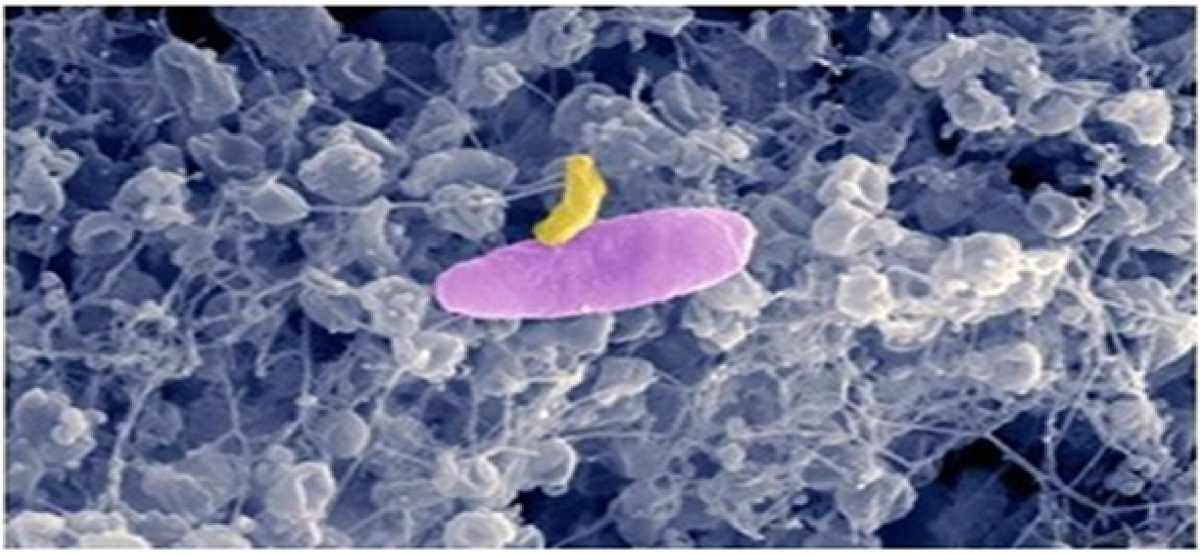

Figure 1: Demonstrates the attack of predacious bacteria on Pseudomonas bacteria.

Conclusions

The predacious properties of Micavibrio aeruginosavorus have contributed to it being considered a live antibiotic. Predatory bacteria also have contributions to combating food-borne pathogens (Foodbrone pathogens), one study reported that Bdellovibrio bacteriovorus was successful in combating Escherichia coli O157:H7 and some types of Salmonella (Salmonella spp). found on stainless steel surfaces, which indicates the possibility of exploiting predatory bacteria in automated food processing and production systems, especially after these bacteria showed their ability to attack bacteria in the form of cell membranes, which are known to be difficult to get rid of by traditional methods, in addition to Being a contributing factor to the outbreak of foodborne diseases, through cross contamination, which usually occurs when food passes through contaminated surfaces, this type of contamination is often observed in automated food processing and production systems.

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