

If all Microorganisms Vanish from the Surface of Planet Earth, what becomes of Man?

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ABSTRACT

Microorganisms were the earliest biological creatures of the universe here on earth and have existed over billions of years ago and bacteria specifically have given rise to all other higher multicellular plants and animals including man. Since microbes are responsible for disease and have caused several millions of deaths in the past among humans, one would wish all these microbes suddenly should be wiped out in order to preserve man. Most often the advantages of bacteria to man are listed but often not seen as justifiable enough to warrant the continued existence of bacteria and archibacteria here on planet earth. The authors looked at the advantages and disadvantages of microbes and also what would happen to man if all microbes are suddenly wiped out from the earth. And found out that it would be a catastrophic event in which global warming will continue to increase rapidly due to increase of Co₂ and decrease of oxygen, all ruminants such as cows and sheep will all die, all plants will die, all refuse dumps, dead animals, dead plants, toxic wastes and accumulated human excreta will not undergo biodegradation and recycled back to the environment. In conclusion the advantages of microbes to man far outweigh their disadvantages of causing diseases and if all microbes vanish from the surface of the earth, in no distant time man as well will vanish.

Keywords: Bacteria, Earth, Microorganisms, Planet, Vanish

INTRODUCTION

Viruses and bacteria are among the earliest creatures on earth and is debatable which of the two was first formed. It is generally believed that viruses such as poliovirus and Herpes viruses were the first creatures

on earth and date back to at least 2.5 billion years old and was closely followed by bacteria such as *Staphylococcus aureus* and *Proteus mirabilis* which emerged on planet earth some 1.8 billion years ago first

with the primitive form of bacteria referred to as Archaeobacteria having existed probably much earlier. Unicellular parasites such as Plasmodium and Trypanosomes appeared on the planet some 1.5 billion years ago and Fungi and mushrooms some 850 million years ago^{1,2}.

Geological time scale composed as a result of evidence from fossils, excavations, radioactive element dating, nucleic acid and protein studies have shown that the universe, the sun and earth are 13.82, 4.6 and 4.5 billion years old respectively. Man in her present form that we are has existed on planet earth only in the past 500,000 years. Microorganisms had interacted with all the other living species from bacteria which gave birth to unicellular parasites and then the multicellular parasites, fishes, reptiles, birds, mammals and man's earliest ancestors the *Homo neanderthalensis* (Cave man)^{3,4}.

In clinical practice bacteria and other microbes are often portrayed as agents of destruction and destabilization as a result of the various diseases they cause. But statistically the percentage of pathogenic bacteria to humans as compared to all harmless bacteria species is extremely minute. Bacteria are integral part of mitochondria of eukaryotic cells and chloroplast of plants, both energy producing organelles, and looking at the positive side of bacteria, they perform the following important functions to humans:⁵⁻⁷

- i. Bacteria create products, such as ethanol and enzymes.
- ii. They can be used in the making drugs, such as antibiotics and vaccines.
- iii. In the making of biogas, such as methane for generation of energy.
- iv. Bacteria help clean up our environment and restore the freshness of nature by decomposing all organic matter, sewage dumps, refuse dumps, sewage spills and toxic wastes.
- v. Bacteria enhance agricultural yields and production by killing plant pests and fixing nitrogen in the soil to enhance soil fertility.

- vi. Can be used as vehicle for transfer of normal genes to human cells in gene therapy and in the manufacture of hormones such as insulin outside the body using *Escherichia coli*.
- vii. Bacteria are often used for fermentation of various food products such as cheese and yoghurt.
- viii. Production of vitamins such as vitamin K in the human intestine.
- ix. Habitation of body niches to prevent colonization of pathogenic bacterial strains.

With the diseases caused by bacteria such as tuberculosis (caused by *Mycobacterium tuberculosis*), typhoid fever (caused by *Salmonella typhi* and *paratyphi*), pyogenic and meningococcal meningitis (caused by *Neisseria meningitides*, *Haemophilus influenzae*, *Streptococcus pneumoniae*, *Listeria monocytogens*, *Escherichia coli*, etc), pneumonia (*Haemophilus influenzae*, *Streptococcus pneumoniae*, etc) and septicaemia (caused by Enterobacteriaceae, *Pseudomonas spp*, etc) leading to several millions of deaths globally every year; one would rather prefer a total elimination of bacteria from the surface of the earth.^{8,9}

If someone were to wave a magical antimicrobial wand and eliminate all Bacteria and Archaeobacteria from planet earth, the following consequences are bound to occur.¹⁰⁻¹²

- i. All bacterial infections such as tuberculosis, syphilis, bacillary dysentery, cholera will automatically disappear from surface of the earth, and this will probably be greeted with wild jubilation but will last for less than a week.
- ii. Man will continue to digest his food normally and obtain vitamins from other sources for a short time.
- iii. The global atmospheric CO₂ will begin to rise up astronomically from animal respiration and human fossil fuel use while O₂ will begin to decrease also dramatically. This is because bacteria in the oceans, lakes and surfaces mop up the largest proportion of CO₂ produced by animals and other surfaces on earth and bacteria also contribute the largest

proportion of O₂ needed by animals and man for respiration.

- iv. All ruminants such as cows, goats, sheep, horses, camels will begin to die after a week due to lack of symbiotic bacteria in their intestines that produce cellulase enzyme that aid in their digestion. All these animals will then starve to death within one month.
- v. All plants and trees will begin to die due to the absence of bacteria to fix nitrogen in the soil to aid soil fertility and photosynthesis will similarly grind to a halt.
- vi. All organic matter will be left undecomposed as all refuse dumps, all dead animals, all fallen trees, all sewage dumps will continue to pile up due to absence of bacteria and the chain of biodegradation by bacteria and recycling back into the system will be broken.

The entire ecosystem will be disrupted due to the absence of bacteria and there would be hunger and starvation which would lead to civil unrest and wars and man would eventually go extinct in less than a year. If all the microorganisms are wiped out at the same time involving bacteria, viruses, fungi, unicellular protozoa and plants, most of the bacterial activity supplemented by fungi and algae involving biodegradation and photosynthesis would also abruptly cease. A complete cessation of life of humans and animals on the planet will be more dramatic from a global biogeochemical asphyxiation.

In conclusion, it would appear plausible and very simplistic to wish bacteria and other microorganisms do not exist so as to stop deaths from these microbes as the pathogenic microbes are statistically insignificant. Their overall benefits to humans far outstrip their proportionate contribution to disease hence man should device means to prevent, control and treat their infections. Their total elimination would eventually lead to the total elimination of man from the planet as well.

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