Effect of Cynobacteria on Fuel Formation and Enhance Its Activity of Effect By Adding Specific Nano-Partical

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ABSTRACT

Cyanobacteria, being photosynthetic organism, use the sun energy,H2O and CO2 to synthesize their energy storage component such that carbohydrate, lipids and proteins. These energy storage components forms a potential feed stock which can be converted into bioenergy such that fuels.

Importance of cyanobacteria –Cyanobacteriaare very important organism for the health and growth of many plants. They are one of very few groups of organism that can convert inert atmospheric nitrogen into an organic form, such as nitrate ammonia.

Relation between cyanobacteria and metals constitute a large field of toxicological relevance

1. The chronic and acute effects of some metal on the growth, metabolism and survival of cyanobacteria
2. The ability of cyanobacteria to accumulate detoxify metabolize and sequester metals depending on growth conditions the effects of dissolved metal ion (Ca,Cu,Pb,Cd) can include both the inhabitation and stimulation of microcytic blooms.

Trace of metal are required for fundamental biochemical processes, such as photosynthesis and respiration cyanobacteria metal hemostasis acquires and important role because the photosynthesis machinery imposes an high demand for metals making them limiting factors for cyanobacteria ,especially in the open oceans. On the other hand, in the last two centuries, the metal concentration in marine environment and take sediments have increased as a result of several industrial activities .In all cases, cells have to tightly regulate up take to maintain their intracellular concentration belowtoxic levels(1) .Mechanisms to obtain metal under limiting conditions and to protect cells from an excess of metals are present in cyanobacteria understanding metal homeostasis in cyanobacteria and the protein involved will help to evaluate the use of these microorganism in metals bioremediation. Furthermore it will also help to understand how metal availability impact primary production in the oceans.

Due to the interference of metal or some minerals , there is a change in the activity of cyanobacteria or these cyanobacteria become active due to metal ions or they start forming bio-fuel(2).

INTRODUCTION:

Cynobacteria (blue-green algae) are group of microscopic photosynthetic bacteria, seen in a range of water bodies,

Usually they are seen ina lower number and can turn ample in number in shallow, warm and undisturbed surface of water which receivedabundant sunlight, When this takes place, it form blooms which discolor the water or produce scums or floating rafts on water surfaces

Theory: Heavy metal biosorption is a technique that has been studied with increasing interest since the 1950s. Various authors recognize and frequently study the mechanisms by which the process is conducted and the variables that affect the process. The advantages that support this bibliographic forcefulness are the low cost of the raw materials that constitute bio sorbents, especially algae, their availability and the ability to treat solutions where it is expensive to operate with other methods due to the low concentrations of metals

Cyanobacteria played an important role in the evolution of Early Earth and the biosphere. They are responsible for the oxygenation of the atmosphere and oceans since the Great Oxidation Event around 2.4 Ga, debatably earlier.

Cyanobacteria have great potential as a platform for biofuel production because of their fast growth, ability to fix CO_2 gas, and genetic tractability(3)(4). They also preserve the sustainability of an ecosystem without harming the environment. High-performance biofuels made from cyanobacteria can be utilized as a base for the production of green energy. Although a lot of studies have been conducted where plants and crops are used as the source of energy, cyanobacteria have been reported to have a more efficient photosynthetic process strongly responsible for increased production with limited land input along with affordable cost. The production of cyanobacteria-based biofuels can be accelerated through genetic engineering or genomics research, which may help to meet the global demand for these fuels on a large scale. Cyanobacteria strains that have undergone genetic modifications have been developed as part of a green recovery approach to transform membrane lipids into fatty acids to produce cheap and eco-friendly green energy. Cyanobacteria also produce different biofuels such as **butanol, ethanol and isoprene(5)**. The four different generations of biofuel production to meet the energy requirement have been discussed in this review. This review presents a comprehensive strategy for the commercial viability of green energy production utilizing cyanobacteria to achieve a price for biofuels that can compete with the present or future market.

Biochemistry:- The body of bacteria is made up of lipids,which are present its thylakoid membrane, which also convers lipids into fatty acids, these fatty acids are used as biofuel, cyanobacteria is an engineer in itself which convert fatty acid into biofuel.This biofuel is bioethanol, isobutaldehyde etc.

Cyanobacteria possess photosynthesis and respiration together, or possess both ATPsynthase or respiration,which absorb sunlight during the day or convert it into potential energy through electron transfer. Which stimulates ATP synthases to produce ATP(6).

Involvement of metal to the algae production

Algae productivity is often correlated to levels of Zn

Zinc play many roles in a number of different fields including chemistry, biology, and medicine [7].

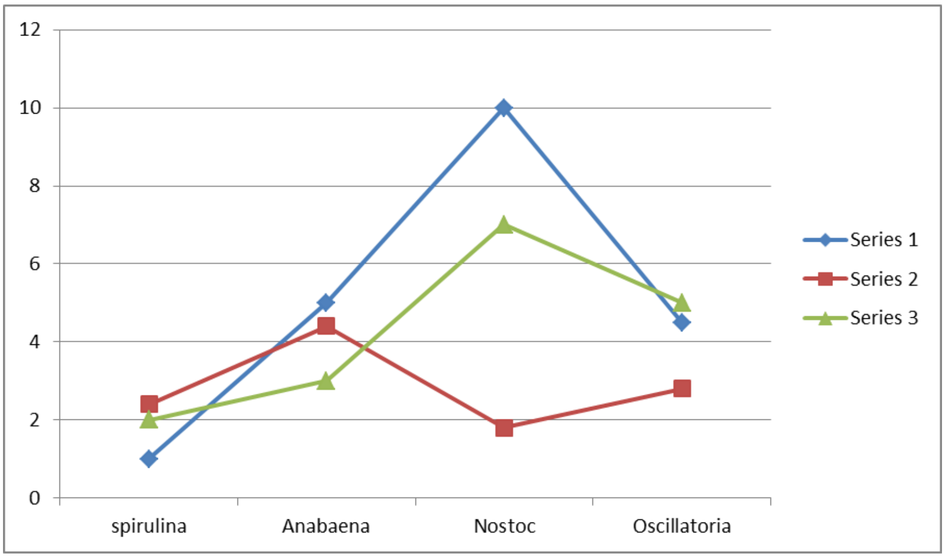
They have also become indispensable in many modern technologies but the growing demand for these metals has also increased their release into the surrounding biosphere. Therefore, it is important to consider and address the impacts of increased Zinc on the environment. Zinc are considered essential elements that can induce positivephysiological responses in the living organism. They are essential for any known metabolic process, but under certain conditions(8)(9).

Beneficial effects of Zinc

The probable biological effect of zinc is related to similarities between their ionic radii and coordination numbers with elements such as Ca, Mn, Mg, Fe. Another aspect is their ability to form stable complexes with organic molecules .Substitution of essential metal ions involves, for example, changes in enzyme

activity, protein conformation, or polymerization. Also, changes in the use or allocation of ion channels affects specific membrane permeability and the cellular ion ratio(10).
Although zinc have been used for decades, particularly in China and also in all over world , as fertilizer in agriculture, their specific effects on plants and less so on algae, are not understood. Beneficial effects of zinc on growth and quality have been studied, mostly on crops and domestic animals .Absorption, transmission, and metabolic conversion of nutrients were stimulated; metal deficiencies were overcome; and increases in metabolism via enzymatic activities were observed. Likewise, effects of zinc on photosynthesis or resistance to stress caused by drought, acid rain, and/or toxic metals (reviewed by have been described. However, a specific cellular or molecular model for these observations has not been proposed and therefore mechanisms of action of zinc in plants or algae remain un-clear(11),(12).

Result and discussion:
In this experiment, an attempt is made to prove that every second the concentration of zinc in algae is increased beyond a limit concentration, the adverse effect occur on the metabolic activity of the algae, or their metabolic activity does not work properly.



Conclusion:
Algae are very important organisms in terms of ecology, being at the very beginning of the food chain. Their relationships with metals therefore affects other living organisms. Their ability to accumulate zinc may have an impact on the surrounding environment, representing both a threat and an opportunity, with the potential for further study and use. As bioaccumulation abilities and beneficial or non toxic effects of zinc differ in individual algal strains, it is difficult to predict specific ecological hazards. Algae in combination with zinc offer a wide variety of applications. They can be used as bioindicators, fertilizers, toxin detectors, or for phytoremediation and recycling. Therefore, understanding the relationships between algae and zinc is very important. Once we understand the molecular mechanisms of their effects, we will have greater opportunities for their use.

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