

Claiming the Theory of Chemical Origin of Life Suggested by Oparin and Haldane

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Abstract- When I Observed the latest Theories related to origin of life that is the Theory of Chemical Origin Of Life I got a concept that there are numerous contradictions the theory suggested by Oparin and Haldane in the Theory Of Chemical Origin Of Life

INTRODUCTION

This argument paper is about the contradictions which I have observed in the Hypothesis given by the scientist Oparin And Haldane

After a long term study of Oparin And Haldane Hypothesis which explains the origin of life on the earth I observed that there are some major contradictions in the Hypothesis which are yet to be studied by the evolutionary scientists

for the better and proper explanation of the origin of life on the Planet Earth

When we study the history we will find that there are many scientists and philosophers who have attempted to explain the origin of life on the planet earth by the help of several different theories given by them

These theories are as follows:

- **THEORY OF ABIOGENESIS**
This theory was suggested by Aristotle and Plato
According to this Theory it was stated that all living Species originates from the non living substances
- **THEORY OF SPECIAL CREATION**
This theory was suggested by Father Suarez a Spanish priest
According to this Theory all the living Species were created by the God and not even living species but also all the non living and even planet Earth is created by the God

But as this theory does not have any platform or base it was rejected by the scientists

But this concept was a completely religious one not actually the scientific one.
Hence this concept was also rejected by the scientists

- **THEORY OF BIOGENESIS**

This Theory was suggested by Louis Pasteur
According to this theory Life originates only from the Pre Existing Life

This Theory was actually the conclusion of a Experiment Known as the Swan Neck Experiment

In swan Neck Experiment Pasteur took two flasks one with Straight neck and another with curved neck like swan

Both the containers were kept in an open environment with a boiled broth in it for few days

It was observed that the microbial colonies were developed in the container with straight neck and not got developed the container with curve neck as the straight neck container was in the direct contact with the environment Hence Louis Pasteur concluded that Life originates only from the Pre Existing life only But this theory explains the Continuity of life On Earth but fails to explain Origin Of Life On The Earth Hence this theory was also rejected

- **THEORY OF CHEMICAL ORIGIN OF LIFE/OPARIN AND HALDEN HYPOTHESIS**

This Theory was proposed by the scientists named OPARIN and HALDEN

This Theory is the universally accepted theory of origin of life on the earth

This theory consist of the following points:

- **INITIAL ATOMIC PHASE**

According to this initially all the elements were present in their atomic phase

Havier Elements like Iron , Nickle etc. were present at the center of the Earth

Relatively light weighted elements like Na, Mg, K etc. were present on the surface of the earth

Most Light weighted elements like H, O, N, C etc. were present above the surface of the earth

ALL these elements forms the primitive atmosphere of the earth

- **MOLECULAR PHASE**

Initially Hydrogen being the most reactive element reacted with the oxygen and formed the water vapour and in this process the entire oxygen was consumed As the Entire oxygen was consumed the environment became reducing in nature

Later on Ammonia was formed. Ammonia and Water Vapour are considered to be the first inorganic compounds of the primitive atmosphere.

- **FORMATION OF FIRST ORGANIC COMPOUNDS**

Due to condensation of Water vapour clouds were formed and rainfall started.

Gradually raindrops reached the surface of the Earth and filled the depressions. That is How the oceans were formed

This water in oceans contains Nitrogen, Carbon and Ammonia Dissolved Nitrogen and Carbon reacted with Metals and forms carbides and nitrides.

Carbides and Nitrides Later on give rise to the Methane and Hydrogen Cyanide.

Methane and Hydrogen cyanide are considered as the first organic compounds of primitive atmosphere

All these substances were dissolved in oceanic water and gradually they started to react with each other.

Because of these reaction simple organic compounds were formed for example Amino acids,

Monosaccharides, Fatty acids, Nitrogen Bases etc. Gradually oceanic water became saturated from these substances

○ FORMATION OF PROTOBIONTS

Protonbionts were formed in Laboratory and It was assumed that this should be the same method how life was originated There are two types of protonbionts initially which are as follows:

- a) Coacervates
When the mixture of proteins and polysaccharides is vigorously shaken then some colloidal droplets appears in solution. These droplets are known as Coacervates They are not considered as the precursors of the life as the limiting membrane of lipid is absent around it

heated and immediately cooled then the colloidal droplets appear in the solution known as Microspheres. Microspheres are considered as the precursor of life because:

- i. They possess limiting membrane around them
- ii. They have ability to absorb glucose from the medium and they can also metabolise it by the help of simple reactions
- iii. They have ability to multiply by the process same as budding

- b) MICROSPHERES
When the mixture of organic compound is

○ EARLY CELLS ACCORDING TO THE MODE OF NUTRITION

A. CHEMOAUTOTROPHES AND ANAEROBES

Earliest cells utilised dissolved organic compounds of the oceanic water for energy and they were anaerobes.

Gradually all the organic compounds were consumed and now they

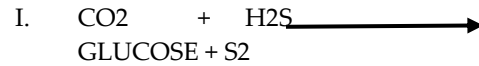
started to consume the inorganic compounds for the production of energy They can be compared with the iron bacteria of today's era

B. PHOTOAUTOTROPHES

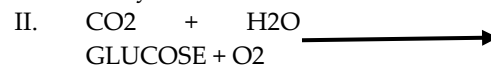
During the course of evolution chlorophyll like structure appeared in the

earliest cells and now these cells can synthesize food in the presence of light

These type of organisms appeared in two stages:



They can be compared with the sulphur bacteria of today's era



They can be compared with the cyanobacteria of present era

They utilise water as the hydrogen donor for the first time and oxygen was released in the atmosphere in free state for the first time in environment and

because of this the primitive atmosphere became oxidising in nature.

This point in the evolutionary history is known as oxygen revolution

Because of oxidising nature of atmosphere process of chemical origin of life was stopped and now life can only originates from the pre existing life only

So the Entire concept can be stated as **Abiogenesis first and Biogenesis ever since**

○ UREY AND MILLER EXPERIMENT

This experiment is considered as the experiment to verify Oparin and Halden Hypothesis

This experiment is also known as SIMULTATION EXPERIMENT or SPARK CHAMBER EXPERIMENT

In this experiment Methane, Ammonia and Nitrogen were taken in the ratio of 2:1:2 and water vapour was mixed with them

The temperature was maintained at 800 degree Celsius for 21 days and after 21 days it was observed that Glycine, Alanine and Aspartic acid have been formed in solution

Hence Oparin and Halden hypothesis was verified.

But there is nothing in this experiment which verifies Oparin and Halden hypothesis as it is just a chemical reaction.

On the other hand the temperature was maintained at 800 degree Celsius for 21 days but in the hypothesis during the formation of microspheres mixture was immediately cooled down.

Hence we can say that it is not an experiment it is just a chemical reaction.

○ **DRAWBACKS OF THEORY OF CHEMICAL ORIGIN OF LIFE**

Till now the theory of chemical origin of life is considered as the most accurate theory to explain the origin of life but there are some drawbacks in the theory which are as follows:

- According to OPARIN and HALDEN hypothesis initially all the elements were in their atomic state
- During the atomic phase Hydrogen was the most reactive element and it was stated by Oparin and Halden that initially hydrogen reacted with oxygen and in that process entire oxygen was consumed but if we will look at the hypothesis in a little bit of scientific way then we will come to know that if there will be formation of water molecule then the hydrogen should be consumed first and some amount of oxygen should be left behind as in formation of one water molecule two atoms of

Hydrogen are required and one Atom of Oxygen is required

- **Hence according to this concept the first inorganic compounds were H₂O and NO₃ or NO₂ instead of H₂O and NH₃**
- **And if there is something like this then there is nothing an event like oxygen revolution in the evolutionary history as oxygen is already there in atmosphere**
- And according to this it is not compulsory that life should only originate in water it can also be originated in land
- Another Drawback of the theory is that during the formation of microspheres the organic compounds were heated and then they were immediately cooled down

But if we will consider the scientific aspects of that time then we will come to know that this **phenomena of immediately cooling after heating is not practically possible**

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