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RESEARCH ARTICLE

THE BIOEVOLUTION LINK BETWEEN THE TWO BASIC ELECTRON, PROTON DEPENDENT METABOLIC REACTION SYSTEM OF OBTAINING OF ATP

***Ambaga, M.**

New Medicine Medical Institute, Ulanbator, Mongolia

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ABSTRACT

Owing to the bioevolution link existed between the two basic electron, proton dependent metabolic reaction system of obtaining of ATP during last 4 billion years had been formed and developed a living processes in our planet. In the early period of 4 billion years of bioevolution development had been formed the first reaction system of obtaining of ATP in the form of the slow developed bioenergy accumulating system (2 billion years ago) "Donator molecules as water molecules + ADP + Pi + H^+ + nH + memb.space = ATP + nH + O_2 formation with shortage of membrane redox potentials three - state line system and with lack of O_2 acceptor utilization regulations". In the last period of 4 billion years of bioevolution development had been formed the second reaction system of obtaining of ATP in the form of more powerful energy accumulating systems as "Donator molecules (glucose, aminoacids, fatty acids) + membrane redox potentials three - state line system + acceptor as O_2 + ADP + Pi + H^+ + nH + memb.space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" (Ambaga and Tumen-Ulzii, 2015). Without the first electron, proton dependent reaction system of obtaining of ATP as "Donator molecules as water molecules + ADP + Pi + H^+ + nH + memb.space = ATP + nH +O_2 formation with shortage of membrane redox potentials three - state line system, lack of O_2 acceptor utilization regulations" it was impossible to wait the appearance of second more powerful energy accumulating systems as "Donators (glucose, aminoacids, fatty acids) + membrane redox potentials three - state line system + acceptor as O_2 + ADP + Pi + H^+ + nH + memb.space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" .

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INTRODUCTION

The electron, proton dependent two metabolic reaction system of obtaining of ATP had been played the more important role to ensure a constant supply of energy to generate and maintain the biological order that keeps them alive. Depending on the type of the electron, proton dependent metabolic reaction system of obtaining of ATP all cells obtain energy from various organic molecules, this energy is derived from the chemical bond energy in organic molecules to produce ATP.

One is early form of obtaining of ATP, NADPH is light reactions in oxygenic photosynthesis. In case of the chlorophyll - based photosynthetic systems as early form of obtaining of ATP, NADPH the role of proton, electron donors had been served a water molecules. But in case of Green bacteria, Purple bacteria, Heliobacteria, Acidobacteria - photosynthetic electron donors are H_2, H_2S, S, organic matter. Photosynthetic eukaryotes and cyanobacteria carry out oxygenic photosynthesis, so named because oxygen is generated and released in to environment when light energy is converted to chemical energy. It would be more interesting to establish the bioevolution link between the two basic electron, proton dependent metabolic reaction system of obtaining of ATP i.e. first reaction as "Donator molecules as water molecules + ADP + Pi + H^+ + nH + memb.space = ATP + nH +O_2 formation with shortage of membrane redox potentials three - state line system and lack of O_2 acceptor utilization regulations" and second reaction as "Donator molecules (glucose, aminoacids, fatty acids) + membrane redox potentials three - state line system + acceptor as O_2 + ADP + Pi + H^+ + nH + memb.space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" (Ambaga and Tumen-Ulzii, 2015).

****Corresponding author: Ambaga, M.***
New Medicine Medical Institute, Ulanbator, Mongolia

RESULTS

We are proposing that the appearance of first electron, proton dependent metabolic reaction system of obtaining of ATP in the early stage of evolution development of living cells as "Donator molecules as water molecules + ADP + Pi + H^+ + nH + memb.space = ATP + nH + O_2 formation and the shortage of membrane redox potentials three - state line system, lack of O_2

acceptor utilization regulations was more significant events in irreversible forming of life processes in our planet. Also, the appearance of more powerful second energy accumulating systems as "Donator molecules + membrane redox potentials three - state line system + O_2 + ADP + Pi + H^+ + nH + memb.space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" had been followed by presence of "Donator molecules as water molecules + ADP + Pi + H^+ + nH + memb.space= ATP + nH + O_2 formation with shortage of membrane redox potentials three - state line system, lack of O_2 acceptor utilization regulations " system.

In this connection have been raised the three more interesting questions

- **First question** is which molecules have been conditioned the link between electron, proton dependent two metabolic reaction.
- **Second question** is which part of of first electron, proton dependent metabolic reaction system of obtaining of ATP have been generated these link molecules.
- **Third question** is which part of of second electron, proton dependent metabolic reaction system of obtaining of ATP used these link molecules, what are bioevolution significance of these processes.

Molecular oxygen have been formed in the reaction medium, located in the system as "Donator molecules as water molecules + ADP + Pi + H^+ + nH + memb.space = ATP + nH +O_2 formation with shortage of membrane redox potentials three - state line system and with lack of O_2 acceptor utilization regulations.

Oxygen molecules, generated in the this part of reaction medium,located in the system as "Donator molecules as water molecules + ADP + Pi + H^+ + nH + memb.space = ATP + nH +O_2 formation with shortage of membrane redox potentials three - state line system and lack of O_2 acceptor utilization regulations have been served the role of link molecules between electron, proton dependent two metabolic reaction. The link molecules as molecular oxygen have been used in the membrane redox potentials three - state line system, located in the of second electron, proton dependent metabolic reaction system of obtaining of ATP to formation of metabolic water molecules, conditioning the continuous flow of proton and electron through this system. Molecular oxygen, generated in the reaction medium, located in the system as "Donator molecules as water molecules + ADP + Pi + H^+ + nH + memb.space = ATP + nH +O_2 formation with shortage of membrane redox potentials three - state line system and lack of O_2 acceptor utilization regulations have been transferred to metabolic reaction medium located in the system as "Donator molecules (glucose, aminoacids, fatty acids) + membrane redox potentials three - state line system + acceptor as O_2 + ADP + Pi + H^+ + nH + memb.space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" (Ambaga and Tumen-Ulzii, 2015) during respiration. After transferring of oxygen to metabolic reaction medium as "Donator molecules (glucose, aminoacids, fatty acids) + membrane redox potentials three - state line system + acceptor as O_2 + ADP + Pi + H^+ + nH + memb.space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" have been occured the such processes as protonation of oxygens by free protons released from donators - food molecules leading to formation of metabolic water i.e. oxidation of free protons released from donators - food molecules.

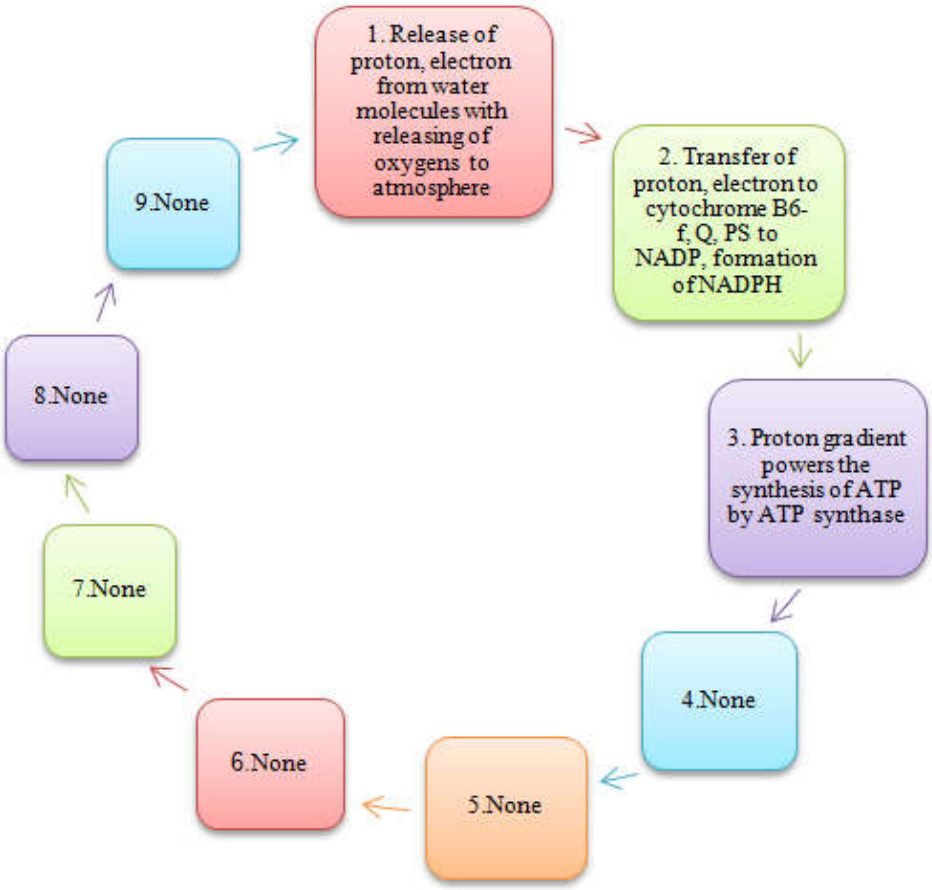

Figure 1. Electron, proton dependent first reaction system of obtaining of ATP

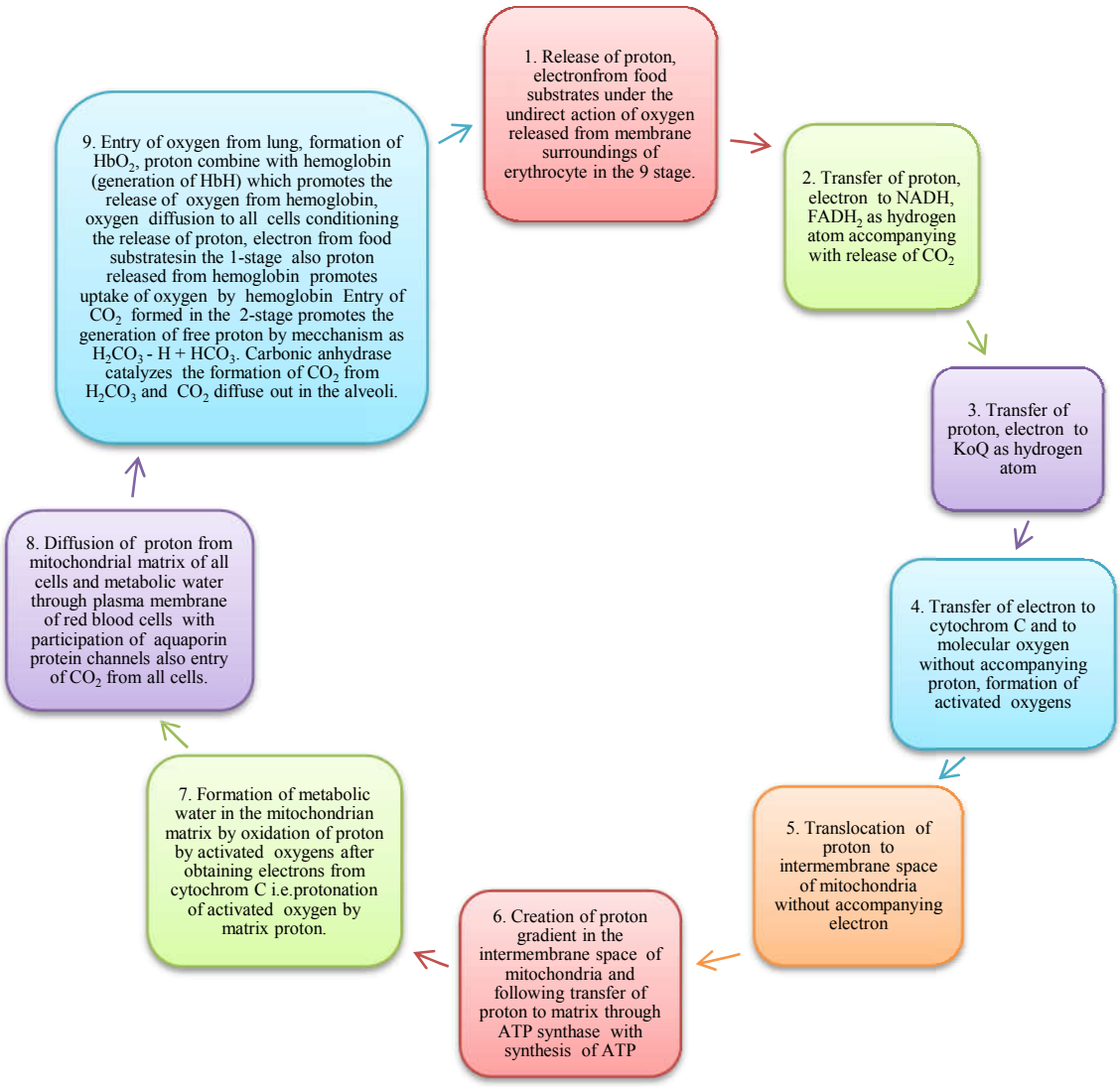

Figure 2. Electron, proton dependent second reaction system of obtaining of ATP

DISCUSSION

A living processes in our planet had been formed and developed in the basis of the bioevolutional link formed between the two basic electron, proton dependent metabolic reaction system of obtaining of ATP during last 4 billion years of evolution development. The first reaction system of obtaining of ATP was the slow developed bioenergy accumulating system of early evolution times (2 billion years ago) as "Donator molecules as water molecules + ADP + Pi + H^+ + nH + memb.space = ATP + nH + O_2 formation with shortage of membrane redox potentials three - state line system and lack of O_2 acceptor utilization regulations" had been formed in the early period of 4 billion years of bioevolution development. The second reaction system of obtaining of ATP was a more powerful energy accumulating systems as "Donator molecules (glucose, aminoacids, fatty acids) + membrane redox potentials three - state line system + acceptor as O_2 + ADP + Pi + H^+ + nH + memb.space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" (Ambaga and Tumen-Ulzii, 2015) which had been formed during last period of 4 billion years of bioevolution development. Without the first electron, proton dependent reaction system of obtaining of ATP as "Donator molecules as water molecules + ADP + Pi + H^+ + nH + memb. space = ATP + nH + O_2 formation with shortage of membrane redox potentials three - state line system and lack of O_2 acceptor utilization regulations" it was impossible to wait the appearance of second more powerful energy accumulating systems as "Donators (glucose, aminoacids, fatty acids) + membrane redox potentials three - state line system + acceptor as O_2 + ADP + Pi + H^+ + nH + memb.space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" .

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