



RESEARCH ARTICLE

THE POSSIBILITY TO ELUCIDATE OF EIGHTH AND NINTH STAGES OF THE MEMBRANE REDOXY POTENTIAL THREE STATE DEPENDENT CLOSED 9 STEPPED CYCLE OF PROTON CONDUCTANCE

*Ambaga, M, Tumen-Ulzii, A and Buyantushig, T.

Mongolia, Ulanbator, New Medicine Medical Institute, Mongolia

ARTICLE INFO

Article History:

Received 20th September, 2023
Received in revised form
27th October, 2023
Accepted 15th November, 2023
Published online 30th December, 2023

Key words:

Proton, Electrons,
System Model.

*Corresponding author: *Ambaga*

Copyright©2023, *Ambaga et al.* This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: *Ambaga, M, Tumen-Ulzii, A and Buyantushig, T.* 2023. "The possibility to elucidate of eighth and ninth stages of the membrane redox potential three state dependent closed 9 stepped cycle of proton conductance." *International Journal of Current Research*, 15, (12), 26712-26714.

ABSTRACT

The Existence of life is strongly dependent on the presence of protons and electrons, which were formed during an event called the big bang, 15 billion years ago. That is, the protons and electrons, which were formed during this event, set the stage for the formation of life in the universe. The historical process of transition of life from the simple membrane-based mechanism for making ATP had converted to a more complex membrane - redox potential, a three state line system for making ATP during last 3,6 billion years. The membrane - redox potential three state line system existed between donors of proton and electrons as food substrates and acceptors of the proton and electrons as air, oxygen in all cells.

INTRODUCTION

The membrane-based mechanism for making ATP were formed very early in life history (Park 2009), its essential features retained in the long evolutionary journey from the time of the early prokaryotes to modern cells during last 3,6 billion years converted to membrane - redox potential three state (alpha state with high oxidation potential, beta state with high reduction potential, gamma state with low redox potential) line system as very important member of reaction "Donators + membrane-redox potentials three state line system + O₂ + ADP + Pi + H⁺ + nH + memb.space = (ATP + heat energy) + H₂O + nH + matrix + CO₂" existed in 87 trillion cells of human body (Ambaga and Tumen Ulzii, 2015). According to suggestion of professor M. Ambaga (2016) in relating to The membrane - based mechanism for making ATP consists of the full 9 stepped cycle of proton, electron conductance inside human body as electrons and protons derived from oxidation of food substrates are transferred along a electron carriers, protons (H⁺) flows back down its electrochemical gradient through ATP synthase, which catalyses the energy requiring synthesis ATP from ADP and inorganic phosphate (Alberts B, et al) as: a. H atoms contained in food molecules through the 1-th stage of the full 9 stepped cycle of electron and proton conductance as release of proton, electrons together from food substrates under the indirect action of oxygen released from membrane surroundings of erythrocytes converted to NADH, FADH₂. b. After these stages as conversion of H atoms contained in food molecules to NADH, FADH₂ have been started the next stages of conductance of free protons, including the 5-th stage of the full 9

stepped cycle of electron and proton conductance as translocation of proton to inter membrane space of mitochondria without accompanying electron, the 6-th stage as creation of proton gradient in the inter membrane space of mitochondria and following transfer of proton to matrix through ATP synthase, the 7-th stage as formation of metabolic water in the mitochondrial matrix by protonation of activated oxygen after obtaining electrons by matrix proton, the 8-th stage as diffusion of proton from mitochondrial matrix of all cells and metabolic water formed during protonation of molecular oxygen by matrix proton entered through plasma membrane of red blood cells by HCO₃/ CL - shift mechanism, also the 9-th stage as metabolic water entered to red blood cells reacts with CO₂ formed in the 2-stage by formation H₂CO₃, which is followed by reaction as H₂CO₃=H⁺+HCO₃ and released during this stage free proton promotes the release of oxygen from hemoglobin, i.e. occur the meeting of CO₂ formed in the 2-stage with metabolic water formed in the 7-th stage of the full 9 stepped cycle of electron and proton conductance inside red blood cells.

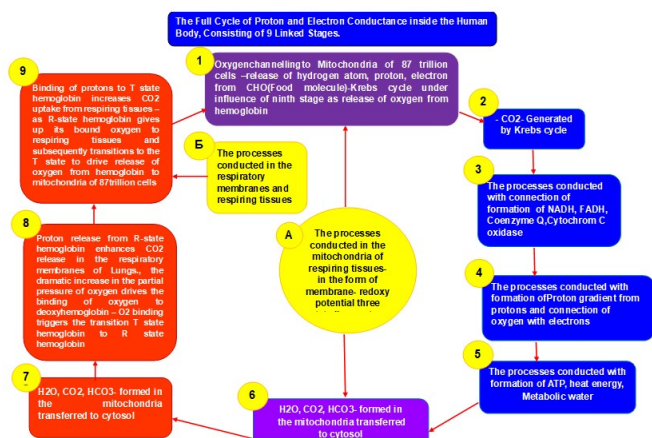
RESULTS AND DISCUSSION

The name as Membrane redox potential three state dependent closed 9 stepped cycle of proton conductance would be explained by this reason as final ninth stage of previous cycle have been conditioned first stage of next cycle. Without full 9 stepped cycle of electron and proton conductance inside the human body it is absolutely impossible to maintain any form of life process.

Now we know which stage of the full 9 stepped cycle of electron, proton conductance inside human body followed after Krebs cycle.

- We know where eaten food and air, taken through inhalation (oxygen) in the cycle of electron and proton conductance would meet inside the human body.
- We know which factors conditioned the release of electrons and protons are released from food substrates.
- We know which factors conditioned the release of oxygen from the hemoglobin.
- We know which factors conditioned the release of carbon dioxide from body.
- We know in which stage that started the cycle of electron and proton conductance inside human body.
- We do know in which stage ended the cycle of electron and proton conductance inside human body.

According to full 9 stepped cycle of electron, proton conductance inside human body, proposed by us:



Some studies, during which have been revealed the transition of R-T, T-R state of hemoglobin gives us the possibility to elucidate eighth and ninth stages of closed 9 staged cycle of proton conductance (Kennelly P, Botham K, McGuinness). In such way now we have the possibility to give an answer to principally important questions mentioned in some our previous publications (M.Ambaga, 2016). According to full 9 stepped cycle of electron, proton conductance inside human body, proposed by us:

First stage of proton conductance -Oxygenchannelling to Mitochondria of 87 trillion cells -Oxygenchannelling-oxygen has been assumed to diffuse across cell bodies- Very low oxygen solubility in cytosol, reported High-solubility 'channels' likely formed by the endoplasmic reticulum, by haem-bearing cytochrome P450 molecules -Accelerated oxygen diffusion via lipid droplets - Lateral diffusion within mitochondrial membranes-Mitochondria - release of hydrogen atom, proton, electron from CHO(Food molecule) -Krebs cycle under influence of ninth stage as release of oxygen from hemoglobin. Second stage of proton conductance - Carbon dioxide, generated by Krebs cycle in the in the mitochondria of 87 trillion cells. Third stage -The processes conducted with connection of formation of NADH, FADH, Coenzyme Q, Cytochrom C oxidase Fourth stage -The processes conducted with formation of Proton gradient from protons and connection of oxygen with electrons. Fifth stage - The processes conducted with formation ofATP, heat energy and Metabolic water. Sixth stage-H₂O, CO₂, HCO₃⁻ formed in the mitochondria transferred to cytosol. Seventh stage-HCO₃⁻/ CL - shift - occurred between Mitochondria -Plasma -Hemoglobin. Eighth stage of proton conductance - Proton release from R-state hemoglobin enhances CO₂ release in the respiratory membranes of Lungs, the dramatic increase in the partial pressure of oxygen drives the binding of oxygen to deoxyhemoglobin - O₂ binding triggers the transition T state hemoglobin to R state hemoglobin. Ninth stage of proton conductance- Binding of protons to T state hemoglobin increases CO₂ uptake from respiring tissues - as R-state hemoglobin gives up its

bound oxygen to respiring tissues and subsequently transitions to the T state s to drive release of oxygen from hemoglobin to mitochondria of 87 trillion cells.

DISCUSSION

According to the full 9 stepped cycle of proton conductance proposed by professor M.Ambaga (2016)-7-th stage conducted as formation of metabolic water in the mitochondrial matrix by protonation of activated oxygen after obtaining electrons by matrix proton, the 8-th stage conducted as diffusion of proton from mitochondrial matrix of all cells and metabolic water formed during protonation of molecular oxygen by matrix proton entered through plasma membrane of red blood cells by HCO₃⁻/ CL -shift mechanism, the 9-th stage is distinguished by this asmetabolic water entered to red blood cells reacts with CO₂formed in the2-stage by formation H₂CO₃, which is followed by reaction as H₂CO₃=H+HCO₃⁻ and released during this stage free proton promotes the release of oxygen from hemoglobin, i.e. occurred the combination of CO₂ formed in the 2-stage with metabolic water formed in the 7-th stage of the full 9 stepped cycle of electron and proton conductance inside red blood cells. But now we made some elucidation in relating to Eighth stage of proton conductance -Proton release from R-state hemoglobin enhances CO₂ release in the Respiratory membranes. The increase in the partial pressure of oxygen drives the binding of oxygen to deoxyhemoglobin, O₂ binding accompanied by the transition T state hemoglobin to R state hemoglobin, the protons combine with bicarbonate to increase the concentration of carbonic acid which in turns favors the carbonic anhydrase catalyzed dehydration of H₂CO₃ to form CO₂ which can then disposed by exhalation-proton mediated coupling of the transition of hemoglobin between T and R states (Kennelly P, Botham K, McGuinness). Carbon dioxide generated in peripheral tissues combines with water to form carbonic acid, which dissociates in to protons and bicarbonate ions. Deoxyhemoglobin acts as a buffer by binding protons delivering them to the lungs. In the lungs the uptake oxygen by hemoglobin releases protons that combine with bicarbonate ion formig carbonic acid, which when dehydrated by carbonic unhydrase becomes carbon dioxide, which then is exhaled (Kennelly P, Botham K, McGuinness).

Ninthstage of proton conductance-Binding of protons to T state hemoglobin increasea CO₂ uptake from respiring tissues - as R-state hemoglobin formed in this stage gives up its bound oxygen to mitochondria of 87 trillion cells and subsequently transitions to the T state the absorbtion of protons both buffers the pH of the acidifying red blood cells.The greater availability of H⁺ in this stage of proton conductance favors the formation of T state therebyenhancing the release of oxygen. Proton binding by T state hemoglobin enables the high levels of CO₂ in respiring tissues consisting of 87 trillion cells would release of oxygen from hemoglobin to 87 trillion cells, decrease in the pH of red blood cells in venous blood. All these processes conducted in the full 9 stepped cycle of proton conductance inside the human body is regulated by the membrane - redox potentials three-state line system of'Donators + membrane - redox potentials three - state line system + O₂ + ADP + Pi + H⁺ + nH + membrane space = (ATP + heat energy) + H₂O + nH + matrix + CO₂' reaction medium located in 14 trillion cells of human body. Free protons and ATP, NADPH, oxygen, carbon dioxide, water molecules and heat energy formed during functioning of this full 9 stepped cycle of proton conductance inside the human body served the role of normal maintaining of all kinds of life process of every cells. The full 9 stepped cycle of electron and proton conductance inside the human body and lung functioned with participation of CO₂, H₂O, H₂CO₃ and HCO₃⁻ and in connection with oxygen/ carbon dioxide exchange mechanism.

REFERENCES

- Alberts B., Bray D., Hopkin K., Johnson A., Lewis J., Raff M., Roberts K., Walter P. 2009. Essential Cell Biology, third edition.

- Ambaga M, Tumen-Ulzii A. 2015. From what is the human body made. pp. 1,1.
- Ambaga M., Tumen-Ulzii A. 2015. Integrated NCM medicine with s-NCM new knowledge (Second edition). pp.9,8.
- Ambaga M., Tumen-Ulzii A. 2015. The life become dependent from the presence of electrons and protons, which were formed during events called big bang 15 billion years ago, electrons and protons sets the stage for formation of life in the universe. pp. 2,1.
- Ambaga M., Tumen-Ulzii A., Buyantushig, T. 2022. System model and Integrated NCM medicine Kennelly P, Botham K, McGuinness, (2023). Harper IllustratedBiochemistry, Thirty second edition.
- Park, MA. 2009. Biological anthropology, fifth edition. Cite this article as:
- Ambaga M. 2016. The Full Cycle of Proton and Electron Conductance inside the Human Body, Consisting of 9 Linked Stages. Acad. J. Sci. Res. 4(6): 127-131.
- Submit your manuscript at [http://www. academiapublishing. org/journals/ajsr](http://www.academiapublishing.org/journals/ajsr)
