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RESEARCH ARTICLE

THE POSSIBILITY TO DRIVE THE MEMBRANE - REDOX POTENTIAL, A THREE STATE LINE SYSTEM DEPENDENT - FULL 9 STEPPED CYCLE OF PROTON CONDUCTANCE INSIDE HUMAN BODY TO FAVORABLE DIRECTION DURING PATHOLOGICAL SITUATIONS

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ABSTRACT

Untill now we can not drive and regulate the intensity of metabolism reaction during diabetes mellitus and hypercholesterinemia to more usefull needed direction because we do not know in which place of cells are existed driving point of regulations subjected to action of such kinds of manipulation and medicaments. Revealed by us the membrane-redox potentials three-state line system is one of more important member of proposed by us the full 9 stepped cycle of proton conductance inside the human body and one of these places of cells, which easily subjected to action of manipulation and medicaments as driving point to conduct the usefull favorable direction of metabolism reactions during diabetes mellitus and hypercholesterinemia. Correcting the $C_6H_{12}O_6 + 6O_2$ = energy + $6H_2O$ + $6CO_2$ equation to right form as "Donators + membrane - redox potentials three - state line system + O_2 + ADP + Pi + H^+ + nH + membrane space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" reaction medium, existing in the full 9 stepped cycle of proton conductance inside human body (proposed by M. Ambaga), might be giving us the possibility to drive the reaction to desired direction needed to stay healthy and to cure patients. In such a case, membrane - redox potential's three-state line system serves the role of main driver. The theoretical and practical clinical significance of the membrane - redox potentials three - state line system of the full 9 stepped cycle of proton conductance inside the human body lies in a possibility to drive metabolism reaction by changing the membrane redoxy potential's three - state line system to more usefull, appropriate variants, according to the need of healthy adaptation need and pathological situations. We can create all the variants of useful reaction background forms of metabolism by changing the membrane - redox potentials three - state line system of the full 9 stepped cycle of proton conductance inside the human body.

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INTRODUCTION

The membrane-based mechanism for making ATP were formed very early in life history (Park MA) and its essential features retained in the long evolutionary journey from the time of the early procaryotes to modern cells during last 4,4 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 + membraneredox potentials three-state line system + O_2 + ADP + Pi + H^+ + nH + memb. space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" existed in 14 trillion cells of human body (Ambaga and Tumen-Ulzii, 2015). 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 4,4 billion years. The membrane - redox potential three state line system existed between donators of proton and electrons as food substrates and acceptors of the proton and electrons as air, oxygen in all cells.

The full 9 stepped cycle of proton conductance inside human body proposed by Ambaga and Tumen-Ulzii (2015)

- Release of proton, electronfrom food substrates under the undirect action of oxygen released from membrane surroundings of erythrocyte in the 9 stage.
- Transfer of proton, electron to NADH, $FADH_2$ as hydrogen atom accompanying with release of CO_2
- Transfer of proton, electron to KoQ as hydrogen atom
- Transfer of elecctron to cytochrom C without accompanying proton

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- Translocation of proton to intermembrane space of mitochondria without accompanying electron
- Creation of proton gradient in the intermembrane space of mitochondria and following transfer of proton to matrix through ATP synthase
- Formation of metabolic water in the mitochondrian matrix by oxidation of proton by molecular oxygens i.e, by protonation of molecular oxygen by matrix proton.
- Diffusion of proton from mitochondrial matrix of all cells and metabolic water through plasma membrane of red blood cells with participation of aquaporin protein channels also entry of CO_2 from all cells.
- Entry of oxygen from lung, formation of HbO_2, proton combine with hemoglobin (generation of HbH) which promotes the release of oxygen from hemoglobin, oxygen diffusion to all cells conditioning the release of proton, electron from food substratesin the 1-stage also proton released from hemoglobin promotes uptake of oxygen by hemoglobin.
- Entry of CO_2 formed in the 2-stage promotes the generation of free proton by mecchanism as H_2CO_3- H + HCO_3. Carbonic anhydrase catalyzes the formation of CO_2 from H_2CO_3 and CO_2 diffuse out in the alveoli. i.e. hemoglobin transports oxygen, carbon dioxide and protons between lungs and all cells mitochondrial matrix.

RESULTS AND DISCUSSION

It should be said that, the globally used equation of living cell metabolic reaction did not reflect this events, which appeared with participation of protons and electrons, which occurred in the the full 9 stepped cycle of proton conductance inside human body proposed by Ambaga and Tumen-Ulzii (2015). Revealed by us the membrane - redox potentials three-state line system is one of more important member of proposed by us the full 9 stepped cycle of proton conductance inside the human body and one of these places of cells easily subjected to action of manipulation as driving point to conduct the usefull favorable direction of metabolism reactions during diabetes mellitus and hypercholesterinemia. The theoretical and practical clinical significance of the membrane-redox potentials three-state line system of the full 9 stepped cycle of proton conductance inside the human body lies in a possibility to drive metabolism reaction by changing the membrane redoxy potential's three-state line system to more usefull, appropriate variants, according to the need of healthy adaptation need and pathological situations.

Correcting the $C_6H_{12}O_6 + 6O_2$ = energy + $6H_2O + 6CO_2$ equation to right form as "Donators + membrane - redox potentials three - state line system + O_2 + ADP + Pi + H^+ + nH + membrane space = (ATP + heat energy) + H_2O + nH +

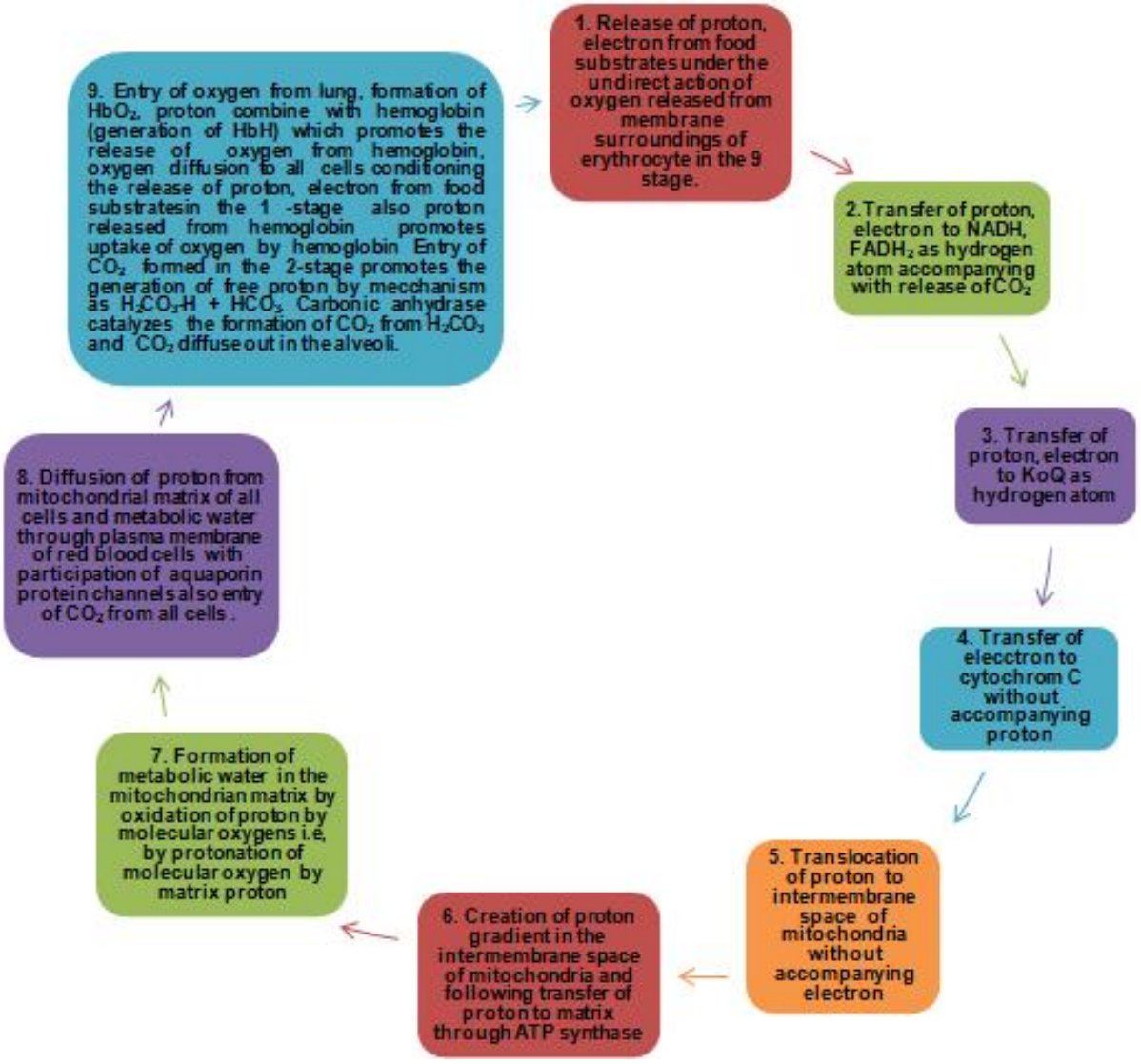

Figure 1. Full 9 stepped cycle of proton conductance inside human body

matrix + CO_2" reaction medium, existing in the full 9 stepped cycle of proton conductance inside human body (proposed by M. Ambaga), might be giving us the possibility to drive the reaction to desired direction needed to stay healthy and to cure patients. In such a case, membrane-redox potential's three-state line system serves the role of main driver.

We can create all the variants of useful reaction background forms of metabolism by changing the membrane - redox potentials three - state line system of the full 9 stepped cycle of proton conductance inside the human body as follows:

- If needed to decrease glucose, cholesterol and triglyceride molecules' contents in the left side of "Donators + membrane-redox potentials three-state line system + O_2 + ADP + Pi + H^+ + nH + membrane space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" reaction medium during diabetes mellitus, hypercholesterolemia and obesity, the alpha state with high oxidizing potentials should be increased in the membrane-redox potential's three - state line system of the full 9 stepped cycle of proton conductance inside human body.
- If needed to increase the glucose, cholesterol andtriglyceride molecules' contents in left side of reaction during hypotrophy, the alpha state with high oxidizing potentials should be increased in the membrane-redox potential's three-state line system of the full 9 stepped cycle of proton conductance inside human body.
- When there is a need to increase the cell division rate during some pathology, the betta state with high reducing potentials is to be increased in the membrane - redox potential's three-state line system of the full 9 stepped cycle of proton conductance inside human body.
- On the contrary, to decrease the cell division rate during cancer pathology the alpha state with high oxy potentials must be maintained in the membrane-redox potential's three-state line system of the full 9 stepped cycle of proton conductance inside human body.
- Quantity of hydrogen atom (proton and electron together) contained in the donators of the first stage in the membrane - redox potential's three - state line system of the full 9 stepped cycle of proton conductance inside human body would make the remarkable influence to reaction intensity; because more hydrogen atoms there are, the more proton gradients and ATPs are produced in the sixth stage of the cycle, allowing more free protons inside the erythrocyte membrane surroundings, such favorable situation may be used to increase body weight during hypotrophyand to prevent the early aging.
- Quantity of free protons inside erythrocyte membrane surroundings at the 9th stage in the membrane-redox potential's three-state line system of the full 9 stepped cycle of proton conductance inside human body would also make the remarkable influence to oxygen diffusion to 14 trillion cells; as more free protons inside erythrocyte membrane, themore oxygen delivery to cells. From this point of view, decrease of these parameters could be key factors to help body weight loss during diabetes mellitus, hypercholesterolemia and obesity.
- Furthermore, the quantity of free protons inside the erythrocyte membrane surroundings also plays major role in exhalation of carbon dioxide from the body, considering that abundant number of free protons inside erythrocyte makes it much more easier to exhale carbon dioxide from human body. This favorable situation could be used to treat the diabetes mellitus, hypercholesterolemia and obesity.
- Intensity of oxygen diffusion to 14 trillion cells of human body has a huge impact on release of hydrogen atom (proton and electron together) from donators existing in the first stage of the membrane - redox potential's three-state line system dependent the full 9 stepped cycle of proton conductance inside human body, this favorable situation may be used to treat diabetes mellitus, hypercholesterolemia and obesity.
- If intensity of the process at 9th step of the cycle rises in the form of increased uptake of oxygen by the human body it is also accompanied with intensity rise of proton and electron release from donators at the first step of the cycle, and this favorable situation could be used to treat the overweight and to increase the efficacy of immunostimulatory therapy.
- The prevalence of fluid alpha state with high oxidizing potentials in the membrane -redox potential's three - state line system leads to intensification of oxygenduffision to 14 trillion cells and to rise of intensity of proton and electron release from donators at the first step of cycle and more conversion of proton gradients to heat energy at 6th stage of themembrane-redox potential's three-state line system dependent the full 9 stepped cycle of proton conductance inside human body, which may be used to treat the overweight, diabetes mellitus and hypercholesterolemia.
- The prevalence of solid betta state with high reducing potentials in the membrane -redox potential's three - state line system leads to lowering of oxygen diffusion to 14 trillion cells and the intensity of proton and electron release from donators at the first step of themembrane - redox potential's three-state line system dependent the full 9 stepped cycle of proton conductance inside human body, which may help to increase body weight during hypotrophyand to increase the efficacy of anti-inflammatory therapy.
- The prevalence of gamma state with low redox potentials in the membrane - redox potential's three - state line system of the full 9 stepped cycle of proton conductance inside human body leads to less high - protonated donators at the first stage, lowering of oxygen diffusion to 14 trillion cells, lowering intensity of proton and electron release from donators at the first step and less conversion of proton gradients to ATP and heat energy at the 6th stage of such favorable situation, happened in this cycle may be used to increase body weight loss during obesity.
- Elevated ratio of reduced HADH: oxidized CoQ andreduced CoQ:oxidized cytochrome C atthe 3rd and 4th stages of this cycle would lead to decrease of proton and electron speed conducting throughthe cycle, which gives us a hint to help increase body weight during hypotrophy and the efficacy of antiviral therapy.
- Elevated ratio of oxidized CoQ:reduced HADH and oxidized cytochrome C:reduced CoQ at the3rd and 4th stages of the membrane-redox potential's three-state

line system of the full 9 stepped cycle of proton conductance inside human body such favorable situation may be used to treat the overweight, diabetes mellitus and hypercholesterolemia.

- Less oxidized cytochrome C, less oxygen consumption, less intensity of proton conductance, less reduced HADH, ATP, less oxidized CoQ, less reduced CoQ and less oxidized cytochrome C, less generation of proton gradient at the 6th stage of the membrane-redox potential's three-state line system of the full 9 stepped cycle of proton conductance inside human body, with all these attributes maintained in membrane-redox potential's three-state line system it will help to treat the overweight, diabetes mellitus and hypercholesterolemia.

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