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RESEARCH ARTICLE

KREBS CYCLE IS ONE OF PARTS OF THE MEMBRANE REDOXY POTENTIAL THREE STATE DEPENDENT 9 STEPPED FULL CYCLE OF PROTON CONDUCTANCE IN THE HUMAN BODY

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ABSTRACT

Krebs cycle andthe membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, described by usare more similar each other in a closed loop figures, unlike glycolysis, the citric acid cycle is a closed loop: last step in the citric acid cycle regenerates oxaloacetate by oxidizing malate, meanwhile first step of Krebs cycle is a condensation step, combining the two - carbon acetyl group (from acetyl CoA) with a four - carbon oxaloacetate molecule forms a six - carbon molecule of citrate, which is used in the first step as proton, electron donators. Similar to Krebs cycle, the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, described by us also have a closed loop figure. In the last ninth stage of the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, 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 substrates as proton, electron donators in the 1-stage of closed cycle, described by us, also proton released from hemoglobin promotes uptake of oxygen by hemoglobin, CO_2 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 in the last stage of closed loop figured cycle of proton conductance.

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INTRODUCTION

The biosphere is big place where are detected proton, electron flows, proton gradient, ATP, genetic code depended life processes with appearance of Krebs cycle included - reaction medium 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", which is belong to the the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, described by us. All cells "breathe" by pumping protons (hydrogen ions) across a membrane, would burn food - donators with oxygen, these all are conditioned the generation of ATP (the universal energy currency of life) by using Krebs cycle included reaction medium 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", which is belong to the the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance described by us.

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The flow of protons through the membrane turbines rotates the stalk of the ATP synthase, and the conformational changes induced by this rotation catalyze ATP synthesis within the reaction medium 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". This process as life hydrogenates carbon dioxide, attaches hydrogen atoms to CO_2 converting carbon dioxide into organic moleculeswas the evolution basis of forming of Krebs cycle included - reaction medium 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", which is belong to the the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance described by us . J. E. Walker (1982) clarified the three - dimensional structure of the enzyme, which consists of one protein group (the F_0 portion) embedded in the inner membrane and connected by a sort of protein stalk or shaft to another protein group (the F_1 portion). The passage of hydrogen ions through the membrane causes the F_0 portion and the stalk to rotate, and this rotation changes the configuration of the proteins in the F_1 portion.

Walker's results supported Boyer's "binding change mechanism," which proposed that the enzyme functions by changing the position of its protein groups in such a way as to change their chemical affinity for ATP and its precursor molecules.

RESULTS AND DISCUSSION

At first time, we revealed that the full 9 stepped cycle of proton conductance inside human body, which starts as release of proton, electron from food substrates under the undirect action of oxygen released from membrane surroundings of erythrocyte in the 9 stage by a closed loop figure. In the framework of biological events as "the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance" would be conducted a following processes as:

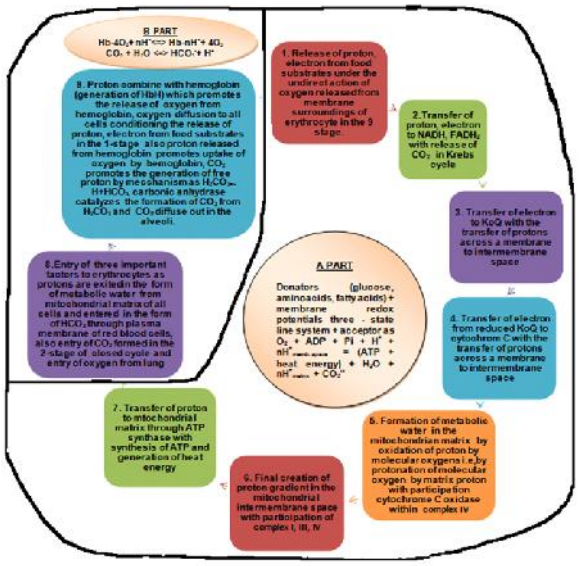

Figure 1. The final variant of closed cycle of proton conductance inside human body

- **First stage** - Release of proton, electron from food substrates under the undirect action of oxygen released from membrane surroundings of erythrocyte in the 9 stage
- **Second stage** - Transfer of proton, electron to NADH, $FADH_2$ with release of CO_2 in Krebs cycle
- Third stage - Transfer of electron to KoQ with the transfer of protons across a membrane to intermembrane space
- **Fourth stage** - Transfer of electron from reduced KoQ to cytochrom C with the transfer of protons across a membrane to intermembrane space
- **Fifth stage** - 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 with participation cytochrome C oxidase within complex IV
- **Sixth stage** - Final creation of proton gradient in the mitochondrial intermembrane space with participation of complex I, III, IV
- **Seventh stage** - Transfer of proton to mtochondrial matrix through ATP synthase with synthesis of ATP and generation of heat energy
- **Eighth stage** - Entry of three important factors to erythrocytes as protons are exited in the form of metabolic water from mitochondrial matrix of all cells and entered in the form of HCO_3 through plasma membrane of red blood cells, also entry of CO_2 formed in the 2-stage of closed cycle and entry of oxygen from lung
- **Ninth stage** - 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 substrates in the 1-stage also proton released from hemoglobin promotes uptake of oxygen by hemoglobin, CO_2 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.

It is more interesting that the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance including Krebs cycle, preceded by Glycolysis (after glycolysis, pyruvate is converted into acetyl CoA in order to enter the citric acid cycle because glycolysis-the cellular degradation of the simple sugar glucose to yield pyruvic acid and ATP as an energy source) is functioned normally with the passage of hydrogen ions through the membrane causes the F_0 portion and the stalk to rotate, and this rotation changes the configuration of the proteins in the F_1 portion confirmed by J.Walker and P. D. Boyer. It may be say that the final part of the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance including Krebs cycle should be connected with "binding change mechanism," which proposed that the enzyme functions by changing the position of its protein groups in such a way as to change their chemical affinity for ATP and its precursor molecule confirmed by J.Walker and P. D. Boyer. Krebs cycle contrary to an oxygen free metabolic pathway, which are widely occurred indicating that it is an ancient metabolic pathway have been played the important role in the generation of more ATP, NADPH (8–38 ATPs per glucose) in the reaction medium 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" which is belong to the the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, owing to participation of oxygen.

The eight steps of the citric acid cycle are a series of redox, dehydration, hydration, and decarboxylation reactions, each turn of the cycle forms one GTP or ATP as well as three NADH molecules and one FADH2 molecule, which will be used in further steps of cellular respiration to produce ATP for the cell owing to reaction medium 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" which is belong to the the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, described by us. The cycle provides precursors including certain amino acids as well as the reducing agent NADH that is used in numerous biochemical reactions within reaction medium 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" which is belong to the the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance.

In such way Krebs cycle is distinguished by that, the first step is a condensation step, combining the two - carbon acetyl group (from acetyl CoA) with a four - carbon oxaloacetate molecule to form a six-carbon molecule of citrate (the rate of this reaction is controlled by negative feedback and the amount of ATP available, such as if ATP levels increase, the rate of this reaction decreases), in the following stage citrate loses one water molecule is converted into isocitrate, in step three, isocitrate is oxidized, producing a five - carbon molecule, α-ketoglutarate, together with a molecule of CO_2 and two electrons, which reduce NAD+ to NADH, a phosphate group is substituted for coenzyme A, and a high - energy bond is formed (step 5), a dehydration process converts succinate into fumarate, two hydrogen atoms are transferred to FAD, producing $FADH_2$ (step 6) the energy contained in the electrons of these atoms is insufficient to reduce NAD^+ but adequate to reduce FAD, water is added to fumarate during step seven, and malate is produced, the last step in the citric acid cycle regenerates oxaloacetate by oxidizing malate, another molecule of NADH is produced within reaction medium 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" which is belong to the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, described by us. It is more interesting that, Krebs cycle andthe membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, described by usare more similareach other in a closed loop figures, unlike glycolysis, the citric acid cycle is a closed loop: last step in the citric acid cycle regenerates oxaloacetate by oxidizing malate, meanwhile first step of Krebs cycle is a condensation step, combining the two-carbon acetyl group (from acetyl CoA) with a four-carbon oxaloacetate molecule lead to form of a six-carbon molecule of citrate, which is used in the first step as proton, electron donators.

Similar to Krebs cycle, the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, described by us also have a closed loop figure. In the last ninth stage of the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, 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 substrates as proton, electron donators in the 1-stage of closed cycle, described by us, also proton released from hemoglobin promotes uptake of oxygen by hemoglobin, CO_2 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 in the last stage of closed loop figured cycle of proton conductance.

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