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Review Article

ADENOSINTRIPHOSPHATE IS VERY IMPORTANT FINAL PRODUCT OF THE MEMBRANE REDOXY POTENTIAL THREE STATE DEPENDENT 9 STEPPED FULL CYCLE OF PROTON CONDUCTANCE IN THE HUMAN BODY

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Abstract

One of examples of a ATP -generating reaction medium "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 is concrete reaction as Glucose + membrane - redox potentials three - state line system +Oxygen ➔ Carbon dioxide + Water + Energy Released (ATP +Heat energy, during which have been occurred the reaction of reduction of oxygen to water with the passage of electron to oxygen through the reduction reaction in right side of equation. ATP can be produced by the three main pathways in eukaryotes are (1) glycolysis, (2) the citric acid cycle -oxidative phosphorylation, and (3) beta-oxidation. In the form of the overall process of oxidizing glucose to carbon dioxide, the combination of pathways 1 and 2, known as cellular respiration, produces about 30 equivalents of ATP from each molecule of glucose , all these reactions are inseparable parts of a 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 CO_2", which is belong to the the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, described by us. It should be say that ATP have been played the role in this process as one of four "monomers" required in the synthesis of RNA., promoted by RNA polymerases, a similar process occurs in the formation of DNA, except that ATP is first converted to the deoxyribonucleotide dATP, like many condensation reactions in nature, DNA replication and DNA transcription also consume ATP, by using these complex reactions as Glycolysis, Oxidative deamination, Betta-oxidation followed by Krebs cycle to acceptors, transporting protons across a membrane ,within the inner mitochondrial membrane, coenzyme Q10 (Q) carries both electrons and protons by a redox cycle Q accepts two electrons and two protons, it becomes reduced to the ubiquinol form (QH_2); when QH_2 releases two electrons and two protons, it becomes oxidized back to the *ubiquinone* (Q) form lead to the formation of proton gradient within a the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance in the human body, described by us. In the context of biochemical reactions, the P-O-P bonds are frequently referred to as high-energy bonds, the hydrolysis of ATP into ADP and inorganic phosphate releases 30.5 kJ/mol of enthalpy, with a change in free energy of 3.4 kJ/mol, a typical intracellular concentration of ATP is 1–10 μmol per gram of tissue in the course of aerobic metabolism all these processes have been conducted by using a 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 CO_2", which is belong to the the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, described by us.

Keywords: Membrane, ATP, DNA.

INTRODUCTION

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. Seventh stage of the full 9 stepped cycle of proton conductance is stage in which have been conducted a transfer of proton to mtochondrial matrix through ATP synthase with synthesis of ATP and generation of heat energy. ATP is classified as a nucleoside triphosphate, which indicates that it consists of three components: a nitrogenous base (adenine), the sugar ribose, and the triphosphate, adenine attached by the 9-nitrogen atom to the 1′ carbon atom of a sugar (ribose), which in turn is attached at the 5' carbon atom of the sugar to a triphosphate group. The three phosphoryl groups are referred to as the alpha (α), beta (β), and, for the terminal phosphate, gamma (γ), neutral solution, ionized ATP exists mostly as ATP^{4-}, with a small proportion of ATP^{3-}. Adenosine triphosphate (ATP) is a precursor to DNA and RNA, and is used as a coenzyme.

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Found in all known forms of life, ATP is often referred to as the "molecular unit of currency" of intracellular energy transfer. When consumed in metabolic processes, it converts either to adenosine diphosphate (ADP) or to adenosine monophosphate (AMP). 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. Seventh stage of the full 9 stepped cycle of proton conductance is stage in which have been conducted a transfer of proton to mtochondrial matrix through ATP synthase with synthesis of ATP and generation of heat energy. *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. *J. E.* 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.

4. Fourth stage - Transfer of electron from reduced KoQ to cytochrom C with the transfer of protons across a membrane to intermembrane space
5. 5. 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
6. Sixth stage - Final creation of proton gradient in the mitochondrial intermembrane space with participation of complex I, III, IV

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

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:

1. 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
2. Second stage - Transfer of proton, electron to NADH, $FADH_2$ with release of CO_2 in Krebs cycle
3. Third stage - Transfer of electron to KoQ with the transfer of protons across a membrane to intermembrane space

7. Seventh stage - Transfer of proton to mtochondrial matrix through ATP synthase with synthesis of ATP and generation of heat energy
8. 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
9. 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.

One of examples of a ATP -generating reaction medium "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 is concrete reaction as Glucose + membrane - redox potentials three - state line system + Oxygen ➔ Carbon dioxide + Water + Energy Released (ATP + Heat energy, during which have been occurred the reaction of reduction of oxygen to water with the passage of electron to oxygen through the reduction reaction in right side of equation. If the ratio of **"**ATP + Heat energy" within ATP - generating reaction medium "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, including a concrete reaction as Glucose + membrane - redox potentials three - state line system have been changed in favor of the increase of ATP, this is the endergonic reaction.

In case, when the ratio of **"** ATP +Heat energy" within ATP-generating reaction medium "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, including a concrete reaction as Glucose + membrane - redox potentials three - state line system have been changed in favor of the increase of heat energy, this is the exergonic reaction. With participation of protons , generated in a 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 have been conducted " ATP cycling, Recycling " because the producing one ATP costs about 3 H^+, exporting one ATP for cellular processes in the cytosol requires 1 H^+. ATP can be produced by the three main pathways in eukaryotes are (1) glycolysis, (2) the citric acid cycle -oxidative phosphorylation, and (3) beta-oxidation. In the form of the overall process of oxidizing glucose to carbon dioxide, the combination of pathways 1 and 2, known as cellular respiration, produces about 30 equivalents of ATP from each molecule of glucose, all these reactions are inseparable parts of a 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 CO_2", which is belong to the the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, described by us. It should be say that ATP have been played the role in this process as one of four "monomers" required in the synthesis of RNA., promoted by RNA polymerases, a similar process occurs in the formation of DNA, except that ATP is first converted to the deoxyribonucleotide dATP, like many condensation reactions in nature, DNA replication and DNA transcription also consume ATP, by using these complex reactions as Glycolysis, Oxidative deamination, Betta-oxidation followed by Krebs cycle to acceptors, transporting protons across a membrane, within the inner mitochondrial membrane, coenzyme Q10 (Q) carries both electrons and protons by a redox cycle Q accepts two electrons and two protons, it becomes reduced to the ubiquinol form (QH_2); when QH_2 releases two electrons and two protons, it becomes oxidized back to the *ubiquinone* (Q) form lead to the formation of proton gradient within a the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance in the human body, described by us. The energy used by human cells in an adult requires the hydrolysis of 100 to 150 moles of ATP daily, which is around 50 to 75 kg, each equivalent of ATP is recycled 1000–1500 times during a single day owing to a 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. In the result of conducting of processes as glycolysis, the citric acid cycle, the electron transport chain, and oxidative phosphorylation, approximately 30–38 ATP molecules are produced per glucose, owing to formation of acetyl-CoA during beta-oxidation of fatty acids which is metabolized by the citric acid cycle to generate ATP, while the NADH and $FADH_2$ are used by oxidative phosphorylation to generate ATP, Ketone bodies can be used as fuels, yielding 22 ATP, the electron transport chain releases the chemical energy of O_2 to pump protons out of the mitochondrial matrix and into the intermembrane space, all these processes have been conducted by using a 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 CO_2", which is belong to the the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, described by us.

In the context of biochemical reactions, the P-O-P bonds are frequently referred to as high-energy bonds, the hydrolysis of ATP into ADP and inorganic phosphate releases 30.5 kJ/mol of enthalpy, with a change in free energy of 3.4 kJ/mol, a typical intracellular concentration of ATP is 1–10 μmol per gram of tissue in the course of aerobic metabolism all these processes have been conducted by using a 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 CO_2", which is belong to the the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, described by us. Amino acid activation in protein synthesis- Aminoacyl-tRNA synthetase enzymes consume ATP in the attachment tRNA to amino acids, forming aminoacyl-tRNA complexes, ATP-binding cassett transporters utilize the energy of ATP binding and hydrolysis to transport various substrates across cellular membranes, ATP is involved in signal transduction by serving as substrate for kinases, Phosphorylation of a protein by a kinase can activate a cascade such as the mitogen-

activated protein kinase cascade, ATP is also a substrate of adenylate cyclase, most commonly in G protein-coupled receptor signal transduction all these processes have been conducted by using a 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 CO_2", which is belong to the the membrane redoxy potential three state dependent 9 stepped full cycle of proton conductance, described by us. Within reaction medium "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 have been conducted such processes as the oxygen will then consume four protons from the matrix to form water, while another four protons are pumped into the IMS) , resulting to form of proton gradient, followed by oxidative phosphorylation and ATP syntesis. ATP synthase, also called complex V, is the final enzyme in the oxidative phosphorylation pathway, uses the energy stored in a proton gradient across a membrane to drive the synthesis of ATP from ADP and phosphate (P_i), this is expressed in the following equation , supposed by us 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.

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