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RESEARCH ARTICLE

THE FULL 9 STEPPED CYCLE OF PROTON CONDUCTANCE AND THE BIOSYNTHESIS OF PURINE BASE AFTER PARTIAL, COMPLETE STOP OF PROTON, ELECTRON FLOWS

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ABSTRACT

Without ATP making bioenergetic 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" where formed such very important macroergic compounds as ATP, ADP and powerful reducing agent as NADPH it is absolutely impossible the biosynthesis of purine base, therefore the biosynthesis of DNA and RNA molecules. In such way the 5-phosphoribosyl - alpha - pyrophosphate (PRPP) molecules, which have been synthesized with participation of ATP and CO_2, ATP molecules formed within reaction mediums 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" owing to the clockwise normal flow of electrons and protons by including in the structure of inosine monophosphate (IMP) after conducting the corresponding reactions became the unseparable structural parts of purine base molecules, also DNA, RNA molecules. The disturbance and stop of ATP dependent biosynthesis of purine base molecules and DNA and RNA molecules have been lead to the death, reversible damage of cells.

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INTRODUCTION

It would be interesting to establish the difference of changes of disturbances of biosynthesis of purine base molecules, depending of partial and complete stop of proton, electron flows. But untill now the recent findings of literature could not give the appropriate answer to above mentioned principally important questions, regarding to difference of disturbances of biosynthesis of purine base molecules, depending of partial and complete stop of proton, electron flows. The participation of evolutionary late electron, proton transporting systems 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" in the biosynthesis of purine base molecules have been appeared as the first stage: ribose-5 phosphate + ATP = 5-phosphoribosyl-alpha-pyrophosphate (PRPP), the second stage: PRPP + glutamine + H_2O = betta-5-phosphoribosylamine, the third stage: betta-5-phosphoribosylamine + ATP + glycine = glycinamid ribotide (GAR), the fourth stage : GAR + N10-formyl-TNF = formyl glycinamid ribotide (FGAR), the fifth stage : ATP + glutamine + FGAR = Formyl glycinamid ribotide (FGAM), at the sixth stage: FGAM + ATP= 5-aminoimidazole ribotide (AIR), the seventh stage: CO_2 + AIR = carboxyaminoimidazole ribotide (CAIR), the eighth stage: CAIR + aspartate + ATP =5-aminoimidazole-4 - (succinylocarboxyamide) ribotide (SACAIR), the ninth stage: SACAIR = fumarate + 5-aminoimidazole - 4-carboxamide ribotide (AICAR), the tenth stage: AICAR + N10-formyl-TNF = 5-formaminoimidazole-4-carboxamide ribotide (FAICAR), the eleventh stage: FAICAR = H_2O + inosine monophosphate (IMP).

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RESULTS AND DISCUSSION

Complete stop of of proton, electron flows within ATP making system 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" have been associated with provocating of the death of cells, where happened the complete stop of clockwise normal flow of electrons and protons leading to disturbances of ATP dependent biosynthesis of purine base molecules. It may be say that complete stop of ATP dependent biosynthesis of purine base, due to complete stop of proton, electron flows would lead to death, irreversible damage of cells. Partial stop of proton, electron flows have been connected with provocating of partial cell damage, which are easily subjected to protection procedure of cell damage, prevention, pharmacotherapy. It can be say that partial stop of ATP dependent biosynthesis of purine base due to temporarily stop of proton, electron flows

would lead to reversible damage of cells. If we can managed to conduct the appropriate prevention, pharmacotherapy the parts of damaged cells with partial stop of proton, electron flows would be turn to normal cells where are preserved clockwise normal flow of electrons and protons, some cells would remain normally. Within frame of recent scientific work we are trying to explain the following interconnected biological events as at first : normal and disturbed forms of basic parameters of ATP making bioenergetic systems 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", at second: the ATP dependent biosynthetic pathway of purine base, at third: partial and complete stopping of normal clockwise flow of electrons, protons, at fourth: in which stages of the full 9 stepped cycle of proton conductance have been happened the partial and complete stopping of normal clockwise flow of electrons, protons, at fifth: how to prevent the partial and complete stopping of normal clockwise flow of electrons, protons by normalizing the disturbed forms of basic parameters of above mentioned bioenergetic systems.

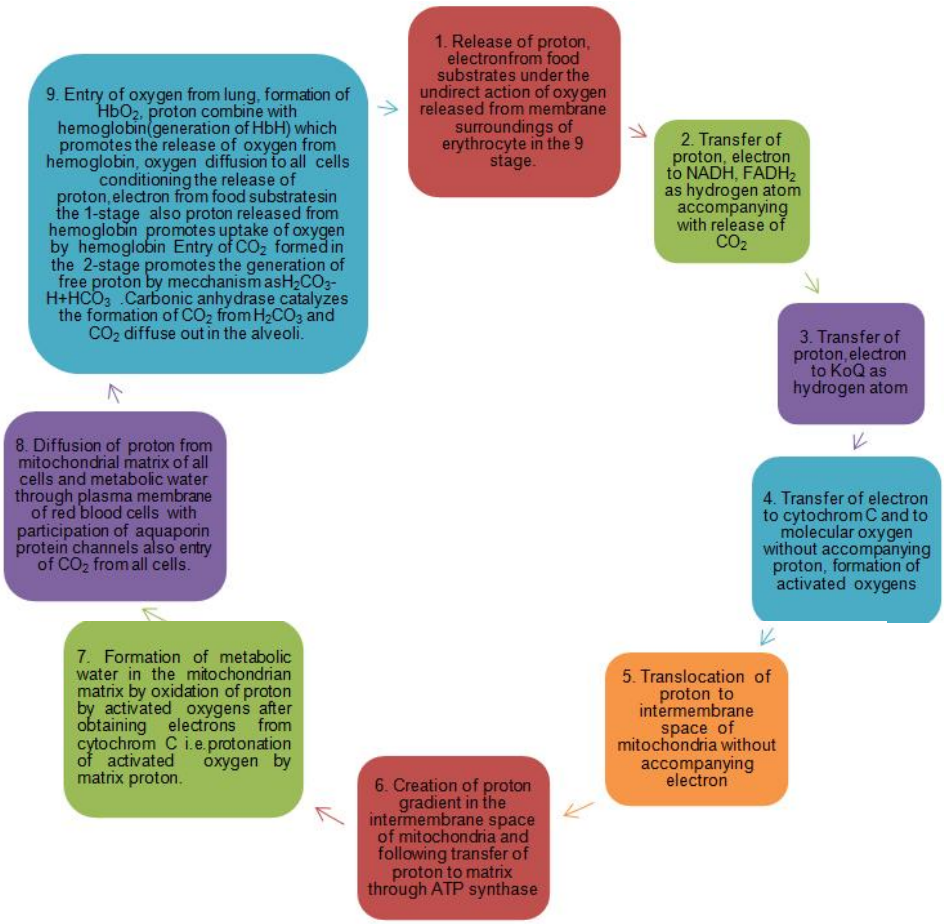

Figure 1. Second late evolution time equation of flow of electrons and protons

Without ATP making bioenergetic 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", where formed such very important macroergic compounds as ATP, powerful reducing agent NADPH it is absolutely impossible the biosynthesis of purine base, therefore the biosynthesis DNA and RNA molecules. The biosynthesis of purine base molecules have been strongly needed the participation of evolutionary late electron, proton transporting systems 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" and the participation of membrane - redox potentials three - state line system, where formed such very important macroerg compounds as ATP, ADP.

The participation of evolutionary late electron, proton transporting systems 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" in the ATP dependent biosynthetic pathway of purine base molecules have been appeared as the first stage: ribose-5 phosphate + ATP = 5 – phosphoribosyl - alpha-pyrophosphate (PRPP), the second stage: PRPP + glutamine + H_2O = betta - 5 -phosphoribosylamine, the third stage: betta-5-phosphoribosylamine+ ATP + glycine = glycinamid ribotide (GAR), the fourth stage : GAR + N10-formyl-TNF = formyl glycinamid ribotide (FGAR), the fifth stage: ATP + glutamine+ FGAR = Formyl glycinamid ribotide(FGAM), at the sixth stage: FGAM+ ATP= 5-aminoimidazole ribotide (AIR), the seventh stage: CO_2 + AIR= carboxyaminoimidazole ribotide(CAIR), the eighth stage: CAIR+ aspartate+ ATP = 5 - aminoimidazole - 4 - (succinylocarboxyamide) ribotide (SACAIR), the ninth stage: SACAIR = fumarate + 5-aminoimidazole - 4-carboxamide ribotide (AICAR), the tenth stage: AICAR + N10 - formyl - TNF = 5 - formaminoimidazole - 4 - carboxamide ribotide (FAICAR), the eleventh stage: FAICAR = H_2O + inosine monophosphate (IMP). In such way 5-phosphoribosyl-alpha-pyrophosphate (PRPP) molecules, which have been synthesized with participation of ATP and also CO_2, ATP molecules formed within reaction mediums 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" owing to the clockwise normal flow of electrons and protons by including in the structure of inosine monophosphate (IMP) after conducting the abovementioned corresponding reactions became the unseparable structural parts of purine base molecules, also DNA, RNA molecules.

At first the middle degree of decrease of ATP biosynthesis level within "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" have been connected with the partial stop of proton, electron flows.

At second the partial stop of proton, electron conductance within membrane - redox potentials three - state line system have been lead to the middle level of biosynthesis of purine base.

At third the middle level of of biosynthesis of purine base have been appeared as middle of reaction speed in all ten stages of biosynthesis of purine base molecules.

At fourth the complete stop of ATP biosynthesis within "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" have been connected with the complete stop of proton, electron conductance within membrane - redox potentials three - state line system.

At fifth the complete stop of proton, electron conductance within membrane - redox potentials three - state line system have been associated with the complete stop of biosynthesis of purine base molecules.

At sixth the complete stop of biosynthesis of purine base have been appeared as complete stop of reaction processes in all ten stages of biosynthesis of purine base molecules. If happens pathological change in the biosynthesis of ATP and formation of heat energy, H_2O, nH + matrix, CO_2 within reaction mediums 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" also would cause the partial and complete stopping of synthesis of Adenosine monophosphate molecules from IMP because the biosynthesis of AMP have been needed the participation of GTP in some stage of biosynthesis as at first stage: IMP + aspartate + GTP = adenylosuccinate. Also the pathological changes in the ATP biosynthesis and formation of heat energy, H_2O, nH + matrix, CO_2 within reaction mediums 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 would lead to disturbing the biosynthesis of Guanosine monophosphate (GMP) from IMP because the biosynthesis of GMP have been needed the participation of ATP in some stage as at the second stage: XMP + glutamine + ATP = GMP.

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