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THE DEPENDENCE OF PROTON RELATED ACIDITY INSIDE ERYTHROCYTES FROM THE PROTON CONDUCTANCE IN THE PREVIOUS 8 STAGES OF THE FULL 9 STEPPED CYCLE OF PROTON CONDUCTANCE

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ABSTRACT

It is established that in case of changing of electrons and protons normal conductance by uncoupler as rotenone - inhibitor of mitochondrial respiratory chain complex I, inhibitor of mitochondrial hydrogen atom transport at NADH: ubiquinone oxidoreductase level, the significance of the pH value in the outside of isolated erythrocytes, the significance of the pH value after the partial hemolysis of isolated erythrocytes, the significance of the pH value after the full hemolysis of isolated erythrocytes changed to alkaline side. Under effect of uncoupler rotenone, which action occured in the 2-th stage of the full 9 stepped cycle of proton conductance inside human body in the form of blockage of transferring of proton, electron to NADH, $FADH_2$ as hydrogen atom accompanying with release of CO_2, the significance of the pH value have been changed to alkaline side i.e. blockage of the transferring of protons and electrons to NADH as hydrogen atom lead to decrease of free proton concentration, proton related acidity inside erythrocyte membrane surroundings. Meanwhile, in case of changing of electrons and protons normal conductance by uncoupler as dinitrophenol - proton ionophore, the significance of the pH value in the outside of isolated erythrocytes, the significance of the pH value after the partial hemolysis of isolated erythrocytes, the significance of the pH value after the full hemolysis of of isolated erythrocytes under uncoupler effect of dinitrophenol, which action occured in the 6-th stage of the full 9 stepped cycle of proton conductance inside human body, when is occured the processes as shuttle protons (hydrogen cations) across membranes, dissipated the proton gradient across mitochondria, the energy of the proton gradient less converted to producing ATP, lost as heat, changed to acidic side i.e. dissipation of the proton gradient across mitochondria lead to increase of free proton concentration, proton related acidity inside erythrocyte membrane surroundings. Meanwhile, in case of changing of electrons and protons normal conductance by uncoupler as oligomycin, the significance of the pH value in the outside of isolated erythrocytes, the significance of the pH value after the partial hemolysis of isolated erythrocytes, the significance of the pH value after the full hemolysis of of isolated erythrocytes under effect of uncoupler dinitrophenol, which action occured in the 6 - th stage of the full 9 stepped cycle of proton conductance inside human body as the inhibition of ATP synthase by blocking its proton channel (Fo subunit), reducing of proton flow to mitochondria matrix, changed to alkaline side i.e. inhibition of ATP synthase by blocking its proton channel (Fo subunit), reducing of proton flow to mitochondria matrix lead to decrease of free proton concentration, proton related acidity inside erythrocyte membrane surroundings.

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INTRODUCTION

It is more interesting conduct the detailed study to establish the relationship between the change of proton conductance (PC) in the erythrocyte level of 9-the stage and in remained previous stages of the membrane - redox potential, a three state line system dependent - full 9 stepped cycle of proton conductance, when is changed a electron and proton normal conductance by uncouplers as rotenone, olygomycin and dinitrophenol in experimental animals.According to the full 9 stepped cycle of proton conductance inside human body proposed by Ambaga and Tumen-Ulzii (2015) 8-th stage of the full 9 stepped cycle of proton conductance inside human body is distinguished by 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.

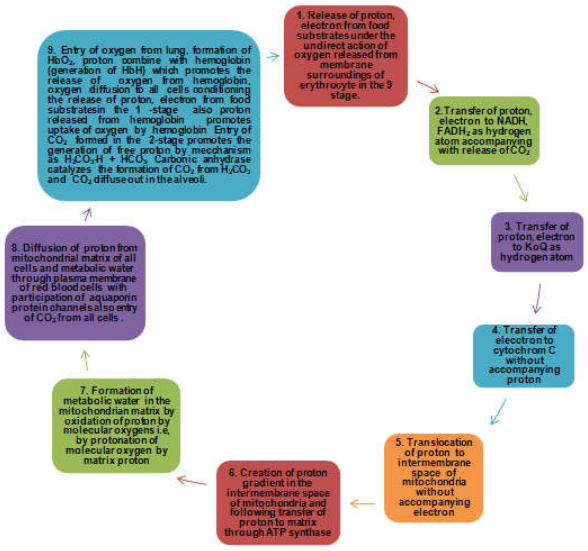

Figure 1. Full 9 stepped cycle of proton conductance inside human body

Also 9-th stage is distinguished by 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 substrates.But until recently now, fewly conducted the investigation aimed to establish the dependence of proton dependent acidity inside erythrocytes from the proton conductance in a 8 previous stages of the full 9 stepped cycle of proton conductance

RESULT AND CONCLUSION

By us established that:

- stage of the full 9 stepped cycle of proton conductance inside human body is distinguished by release of proton, electron from food substrates (carbohydrate, amino acids, fatty acids), under the undirect action of oxygen released from membrane surroundings of erythrocyte in the 9 stage, from this stage started the proton conductance within cycle.
- stage of the full 9 stepped cycle of proton conductance inside human body is distinguished by transfer of proton, electron to NADH, $FADH_2$ as hydrogen atom accompanying with release of CO_2, by which stage continued the proton conductance within cycle.
- stage of the full 9 stepped cycle of proton conductance inside human body is distinguished by transfer of proton, electron to KoQ as hydrogen atom, $FADH_2$ by which stage also continued the proton conductance within cycle.
- stage of the full 9 stepped cycle of proton conductance inside human body is distinguished by transfer of electron to cytochrom C without accompanying proton, which one is stages of continuity of the proton conductance within cycle.
- stage of the full 9 stepped cycle of proton conductance inside human body is distinguished by translocation of proton to intermembrane space of mitochondria without accompanying electron, which one is previous stages of continuum of the proton conductance within cycle.
- According to the full 9 stepped cycle of proton conductance inside human body proposed by Ambaga and Tumen-Ulzii (2015)
- stage of the full 9 stepped cycle of proton conductance inside human body is distinguished by creation of proton gradient in the intermembrane space of mitochondria and following transfer of proton to matrix through ATP synthase, which is played important role in continuity of the proton conductance within cycle.
- Also stage of the full 9 stepped cycle of proton conductance inside human body is distinguished by 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, which is one of a previous stages of continuity of the proton conductance cycle.Meantime**,**
- stage of the full 9 stepped cycle of proton conductance inside human body is distinguished by 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, this stage is played the crucial role in continuum of the proton conductance within cycle.

By our investigation established a many changes of electrons and protons normal conductance caused by uncouplers as rotenone and dinitrophenol in the level of transfer of protons and electrons to NADH as hydrogen atom and, also in the level of the creation of proton gradient in the intermembrane space of mitochondria and following transfer of proton to matrix through ATP synthase. It is established that in case of changing of electrons and protons normal conductance by uncoupler as rotenone-inhibitor of mitochondrial respiratory chain complex I, inhibitor of mitochondrial hydrogen atom transport at NADH: ubiquinone oxidoreductase level, the significance of the pH value in the outside of isolated erythrocytes, the significance of the pH value after the partial hemolysis of isolated erythrocytes, the significance of the pH value after the full hemolysis of isolated erythrocytes changed to alkaline side.

Under effect of uncoupler rotenone, which action occured in the 2-th stage of the full 9 stepped cycle of proton conductance inside human body in the form of blockage of transferring of proton, electron to NADH, $FADH_2$ as hydrogen atom accompanying with release of CO_2, the significance of the pH value have been changed to alkaline side i.e. blockage of the transferring of protons and electrons to NADH as hydrogen atom lead to decrease of free proton concentration, proton related acidity inside erythrocyte membrane surroundings. Meanwhile, in case of changing of electrons and protons normal conductance by uncoupler as dinitrophenol-proton ionophore, the significance of the pH value in the outside of isolated erythrocytes, the significance of the pH value after the partial hemolysis of isolated erythrocytes, the significance of the pH value after the full hemolysis of of isolated erythrocytes under uncoupler effect of dinitrophenol, which action occured in the 6-th stage of the full 9 stepped cycle of proton conductance inside human body, when is occured the processes as shuttle protons (hydrogen cations) across membranes, dissipated the proton gradient across mitochondria, the energy of the proton gradient less converted to producing ATP, lost as heat, changed to acidic side i.e. dissipation of the proton gradient across mitochondria

lead to increase of free proton concentration, proton related acidity inside erythrocyte membrane surroundings. Meanwhile, in case of changing of electrons and protons normal conductance by uncoupler as oligomycin, the significance of the pH value in the outside of isolated erythrocytes, the significance of the pH value after the partial hemolysis of isolated erythrocytes, the significance of the pH value after the full hemolysis of of isolated erythrocytes under effect of uncoupler dinitrophenol, which action occured in the 6 - th stage of the full 9 stepped cycle of proton conductance inside human body as the inhibition of ATP synthase by blocking its proton channel (Fo subunit), reducing of proton flow to mitochondria matrix, changed to alkaline side i.e. inhibition of ATP synthase by blocking its proton channel (Fo subunit), reducing of proton flow to mitochondria matrix lead to decrease of free proton concentration, proton related acidity inside erythrocyte membrane surroundings.

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