ISSN: 0976-3376

Available Online at http://www.journalajst.com

ASIAN JOURNAL OF SCIENCE AND TECHNOLOGY

Asian Journal of Science and Technology
Vol. 08, Issue, 08, pp.5346-5349, August, 2017

RESEARCH ARTICLE

THE FULL 9 STEPPED CYCLE OF PROTON CONDUCTANCE AND THE FORMATION OF THREE ZONES WITH VARIOUS DEGREE OF DISTURBANCES OF CLOCKWISE NORMAL FLOW OF ELECTRONS AND PROTONS DURING SHORTAGE OF DONATORS AND ACCEPTORS

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ARTICLE INFO

Article History:
Received 15th May, 2017
Received in revised form
26th June, 2017
Accepted 20th July 2017
Published online 31st August, 2017

Key words:

The full 9 stepped cycle of proton conductance, Border zone, Disturbance of clockwise Normal flow of electrons and protons.

ABSTRACT

By us revealed that during shortage of donators and acceptors have been formed basic three zones because of disturbing of the ATP – making 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".

- First zone, where the clockwise normal flow of electrons and protons with duration of 4-5 second of every cycle are remained normally after shortage of donators and acceptors.
- Second border zone, where happened the temporarily stop of clockwise normal flow of electrons and protons after shortage of donators and acceptors with causing of anti – clockwise, antispiral-like evolutionary back steps from second evolution late time equation of flow of electrons and protons to early evolution first time equation with provocation of release of proton, electron from glucose by glycolysis, followed by transfer of proton, electron to NAD, formation of NADH and substrate phosphorylation related biosynthesis of ATP without participation of membrane redoxy potential 3 state system, oxygens, ATP synthase with formation of end product as pyruvate.
- Third full necrosis zone, where happened the complete stop of clockwise normal flow of electrons and protons after shortage of donators and acceptors.

From among these three zones, the border zone where happened the temporarily stop of clockwise normal flow of electrons and protons with antispiral - like evolutionary back steps from second evolution late time equation of flow of electrons and protons to early evolution first time equation with provocation of release of proton, electron from glucose by glycolysis are distinguished by this that which is easily subjected to protection of damage, prevention and pharmacotherapy after shortage of donators and acceptors.

INTRODUCTION

It would be interesting if we can establish that how many zones formed after shortage of donators and acceptors, which zone would turn to the full necrosis zone, where happened the complete stop of clockwise normal flow of electrons and protons, which zone are easily subjected to protection procedure of cell damage, prevention, pharmacotherapy, which zone are preserved clockwise normal flow of electrons and protons and remained normally. But untill now the recent findings of literature could not give the appropriate answer to above mentioned principally important questions. We are proposing that the reaction medium 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" are the places, conditioning the appearance of all three zones with various degree of disturbances of clockwise normal flow of electrons and protons, including the full necrosis zone where happened the complete stop of clockwise normal flow of electrons and protons and also border zone, which easily subjected to protection procedure, prevention, pharmacotherapy, the normal zone, when are preserved clockwise normal flow of electrons and protons with duration of 4-5 second of every cycle and remained normaly after shortage of donators and acceptors. It can be say that within reaction medium 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" have been occurred the process of shifting from reaction 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" to reaction as "Donators + ADP + Pi + H^+ + nH + membrane space = (ATP + heat

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energy) + matrix + pyruvate , so named glycolysis , which are conducted in the form of transferring of proton, electron to NAD, formation of NADH and substrate phosphorylation dependent biosynthesis of ATP without participation of membrane redoxy potential 3 state system, oxygens, ATP synthase with formation of end product as pyruvate, depending on which form of three zones are appeared with various degree of disturbances of clockwise normal flow of electrons and protons after shortage of donators and acceptors.

RESULTS AND DISCUSSION

By us revealed that during shortage of donators and acceptors have been formed basic three zones because of disturbing of the ATP - making 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".

- First zone, where the clockwise normal flow of electrons and protons with duration of 4-5 second of every cycle are remained normally after shortage of donators and acceptors.
- Second border zone , where happened the temporarily stop of clockwise normal flow of electrons and protons after shortage of donators and acceptors with causing of anti – clockwise, antispiral-like evolutionary back steps from second evolution late time equation of flow of electrons and protons to early evolution first time equation with provocation of release of proton, electron from glucose by glycolysis, followed by transfer of proton, electron to NAD, formation of NADH and substrate phosphorylation related biosynthesis of ATP without participation of membrane redoxy potential 3 state system, oxygens, ATP synthase with formation of end product as pyruvate.
- Third full necrosis zone, where happened the complete stop of clockwise normal flow of electrons and protons after shortage of donators and acceptors.

From among these three zones, the border zone where happened the temporarily stop of clockwise normal flow of electrons and protons with antispiral-like evolutionary back steps from second evolution late time equation of flow of electrons and protons to early evolution first time equation with provocation of release of proton, electron from glucose by glycolysis are distinguished by this that which is easily subjected to protection of damage, prevention and pharmacotherapy after shortage of donators and acceptors. The feature of normal zone with clockwise normal flow of electrons and protons with duration of 4-5 second of every cycle is distinguished by peripheral location and normal level of dehydrogenase activity and normal level of vascularization. The feature of border zone where happened the temporarily stop of clockwise normal flow of electrons and protons is distinguished by middle location, and decreased level of dehydrogenase activity and relatively normal level of vascularization also by anti - clockwise antispiral-like evolutionary back steps from second evolution late time equation of flow of electrons and protons to early evolution first time equation with provocation of release of proton, electron from glucose by glycolysis, followed by transfer of proton, electron to NAD, formation of NADH and substrate phosphorylation dependent biosynthesis of ATP without participation of membrane redoxy potential 3 state system, oxygens, ATP synthase, formation of end product as pyruvate . The feature of full necrosis zone where happened the complete stop of clockwise normal flow of electrons and protons is distinguished by central location, and complete stop of dehydrogenase activity and lacking of vascularization (Ambaga M, Kogan A.K.Kudrin A.N. 1984). It may be describe two basic processes consisting of first ischemic phase and second recovery phase within border zone where often occurred the temporarily stop of clockwise normal flow of electrons and protons. In the first ischemic phase have been occurred the process of shifting from reaction 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" to reaction as "Donators + ADP + Pi + H^+ + nH + membrane space = (ATP + heat energy) + matrix + puryvate, so named glycolysis.

In the second recovery phase have been occurred the process of shifting from reaction as "Donators + ADP + Pi + H^+ + nH + membrane space = (ATP + heat energy) + + matrix + pyruvate, so named glycolysis, conducting the transfer of proton, electron to NAD, formation of NADH and substrate phosphorylation related biosynthesis of ATP without participation of membrane redoxy potential 3 state system, oxygens, ATP synthase, formation of end product as pyruvate to reaction 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".
If the first ischemic phase characterized by prevalence of reaction as "Donators + ADP + Pi + H^+ + nH + membrane space = (ATP + heat energy) + + matrix + pyruvate, so named glycolysis have not been transformed to reaction 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", it would be complicated by formation of full necrosis zone where happened the complete stop of clockwise normal flow of electrons and protons. If the first ischemic phase characterized by prevalence of reaction as "Donators + ADP + Pi + H^+ + nH + membrane space = (ATP + heat energy) + matrix + pyruvate, so named glycolysis have been transformed to reaction 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" it would be lead to formation of normal zone, where the clockwise normal flow of electrons and protons with duration of 4-5 second of every cycle are remained normaly.

The prevalence of the second recovery phase reaction 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 border zone would be lead to recovery of the clockwise normal flow of electrons and protons resulting to formation of normal zone. In such way, zone with clockwise normal flow of electrons and protons with duration of 4-5 second of every cycle are characterized by maintaining of clockwise normal flow of electrons and protons with duration of 4-5 second of every cycle and by creating of the normal level of releasing of proton, electron from food substrates (carbohydrate, aminoacids, fatty acids), also by creating of the normal precondition of transferring of proton, electron to NADH as hydrogen atom and formation of CO_2 in Krebs cycle, by

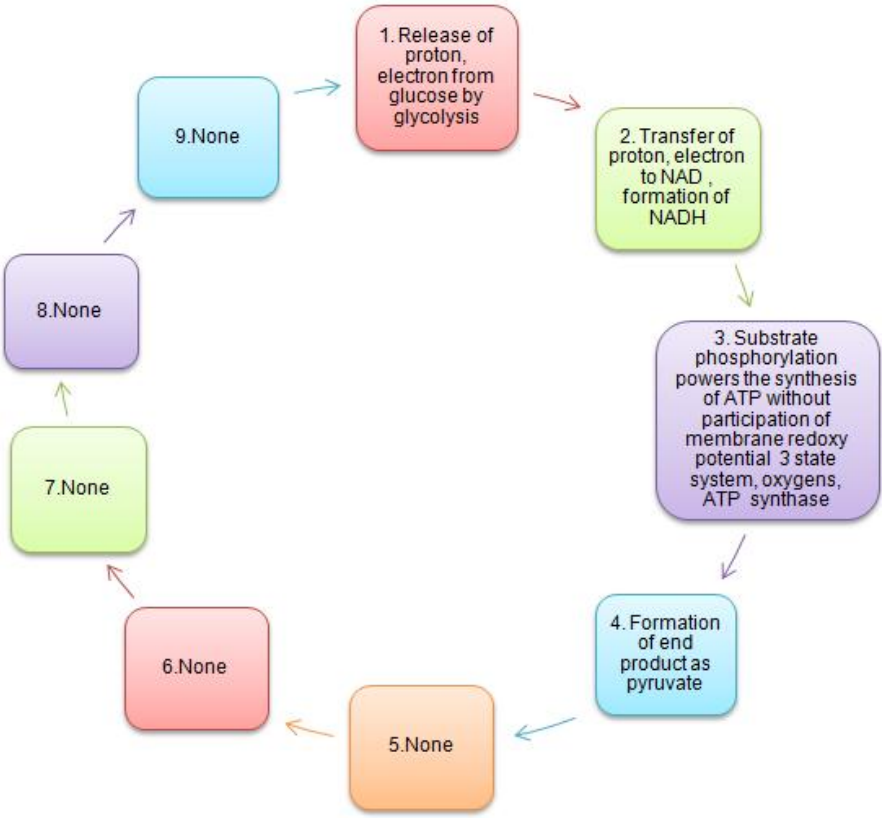

Figure 1. First early evolution time equation of flow of electrons and protons

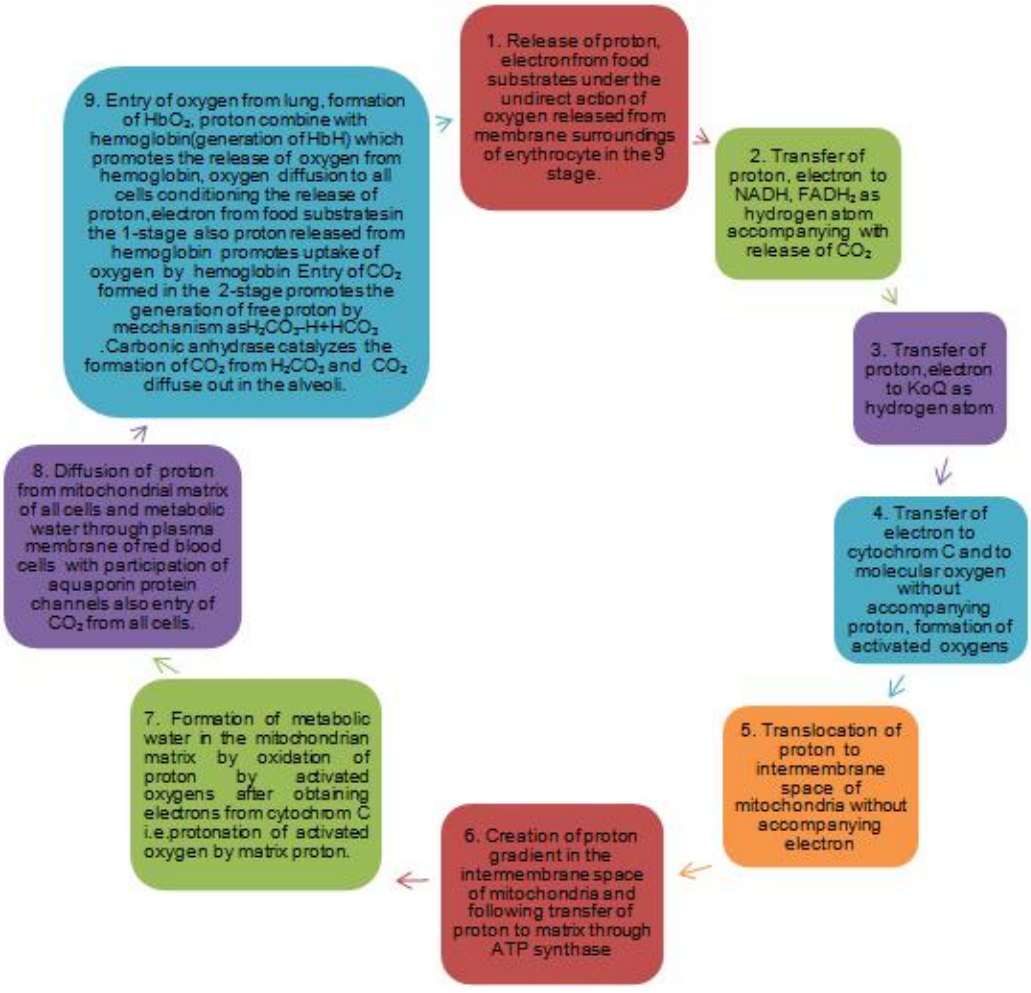

Figure 2. Second late evolution time equation of flow of electrons and protons

normal regulation of transferring of proton, electron to KoQ as hydrogen atom, by normal regulation of transferring of electron to cytochrom C without accompanying proton, also by normal tendency of translocating of proton to intermembrane space of mitochondria without accompanying electron, by maintaining of normal level of creating of proton gradient in the intermembrane space of mitochondria and following transfer of proton to matrix through ATP synthase. Border zone, where happened the temporarily stop of clockwise normal flow of electrons and protons are characterized by formation of mixed forms of reaction forms 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 reaction form as "Donators + ADP + Pi + H^+ + nH + membrane space = (ATP + heat energy) + + matrix + pyruvate, so named glycolysis. Full necrosis zone, where happened the complete stop of clockwise normal flow of electrons and protons are characterized by irreversible stop of electron and proton conductance at first : in the stage of release of proton, electron from food substrates (carbohydrate, aminoacids, fatty acids), at second : in the stage of transferring of proton, electron to NADH as hydrogen atom and formation of CO_2 in Krebs cycle, at third : in the stage of transferring of proton, electron to KoQ as hydrogen atom, at fourth : in the stage of ransferring of electron to cytochrom C without accompanying proton, at fifth : in the stage translocating of proton to intermembrane space of mitochondria without accompanying electron, at sixth : in the stage of creating of proton gradient in the intermembrane space of mitochondria and following transfer of proton to matrix through ATP synthase, at seventh : in the stage of forming of metabolic water in the mitochondria matrix by oxidation of proton by molecular oxygens i.e, by protonation of molecular oxygen by matrix proton, at eighth : in the stage of diffusing of proton, diffusion of metabolic water through plasma membrane of red blood cells with participation of aquaporin protein channels and entry of oxygen from lung to erythrocyte, entry of carbon dioxide from cells to erythrocyte, also at ninth : in the stage of forming of free protons from metabolic water again by reaction as H_2CO_3 = H + HCO_3 (H_2CO_3 formed from metabolic water), proton combine with hemoglobin (generation of HbH) which promotes the release of oxygen from hemoglobin, oxygen diffusion to cells and proton released from hemoglobin promotes uptake of oxygen by hemoglobin and carbonic anhydrase catalyzes the formation of CO_2 from H_2CO_3 and CO_2 diffuse out in the alveoli.

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