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THE BIOLOGICAL SIGNIFICANCE OF RELEASED PROTONS FROM ERYTHROCYTE MEMBRANE SURROUNDINGS WITHIN THE FULL 9 STEPPED CYCLE OF PROTON CONDUCTANCE

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ABSTRACT

The explanation of biological significance of released protons from erythrocyte membrane surroundings within in the full 9 stepped cycle of proton conductance is one of very interesting aspects of Modern medicine. By our suggestion, the biological significance of released protons from erythrocyte membrane surroundings within in the full 9 stepped cycle of proton conductance have been appeared as participation of protons by including in the composition of H_2CO_3 (carbonic acid) and bicarbonate ions in the synthesis of gastric HCL and in the synthesis of bicarbonate ions of pancreatic duct cell, also in the kidney regulation of proton dependent acid – base balance and in the respiratory regulation of proton dependent acid – base balance. In such way may be say that HCO_3 (bicarbonate ions) and hydrogen ions (proton) are derived from carbon dioxide and water molecules, which formed within the full cycle of proton conductance, which conducted as follows as the second stage, where formed CO_2 and the seventh stage, where formed metabolic water - H_2O in the result of oxidation of protons by activated oxygens. Carbon dioxide and water, which enter to all cells have contained protons released from food substrates and repackaged in the erythrocyte membrane surroundings, released from this. Beside all this, protons released from erythrocyte membrane surroundings by incorporating in to composition of HCO_3 (bicarbonate ions) have been participated in the biosynthesis of pyrimidine ribonucleotides, which have been conducted as ATP + HCO_3 + glutamine + H_2O = carbamoyl phosphate, carbomoylphosphate + aspartate = carbamoyl aspartate, carbamoyl aspartate = H_2O + dihydroorotate, dihydroorotate + quinine = orotate, orotate + PRPP = orotidine monophosphate (OMP), OMP = CO_2 + uridine monophosphate (UMP).

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INTRODUCTION

The biological significance of released protons from erythrocyte membrane surroundings within in the full 9 stepped cycle of proton conductance less elucidated in the scientific literature. The accumulation of protons inside erythrocyte membrane surroundings and releasing from this are strongly connected with all previous stages of transferring of protons within the full cycle of proton conductance, which conducted as follows as the second stage, where formed CO_2 and the seventh stage, where formed metabolic water - H_2O in the result of oxidation of protons by activated oxygens, after this have been occurred the reaction between CO_2 and H_2O with formation of H_2CO_3 and dissociation reaction with formation of HCO_3. HCO_3 formed during this reaction have been entered to the erythrocyte membrane surroundings, containing some parts of protons, released from food substrates. The prevalence of fluid alpha state with high oxidation potentials in the membrane - redox potentials three - state line system, which included to full cycle of proton conductance leads to increase of released protons from erythrocyte membrane surroundings within the full 9 stepped cycle of proton conductance with subsequent intensification of synthesis of gastric HCL and synthesis of bicarbonate ions in the pancreatic duct cell, also kidney regulation of proton dependent acid – base balance and respiratory regulation of proton dependent acid – base balance. The prevalence of gamma state with low redox potentials in the membrane - redox potentials three - state line system, which included to full cycle of proton and electron conductance leads to to decrease of released protons from erythrocyte membrane

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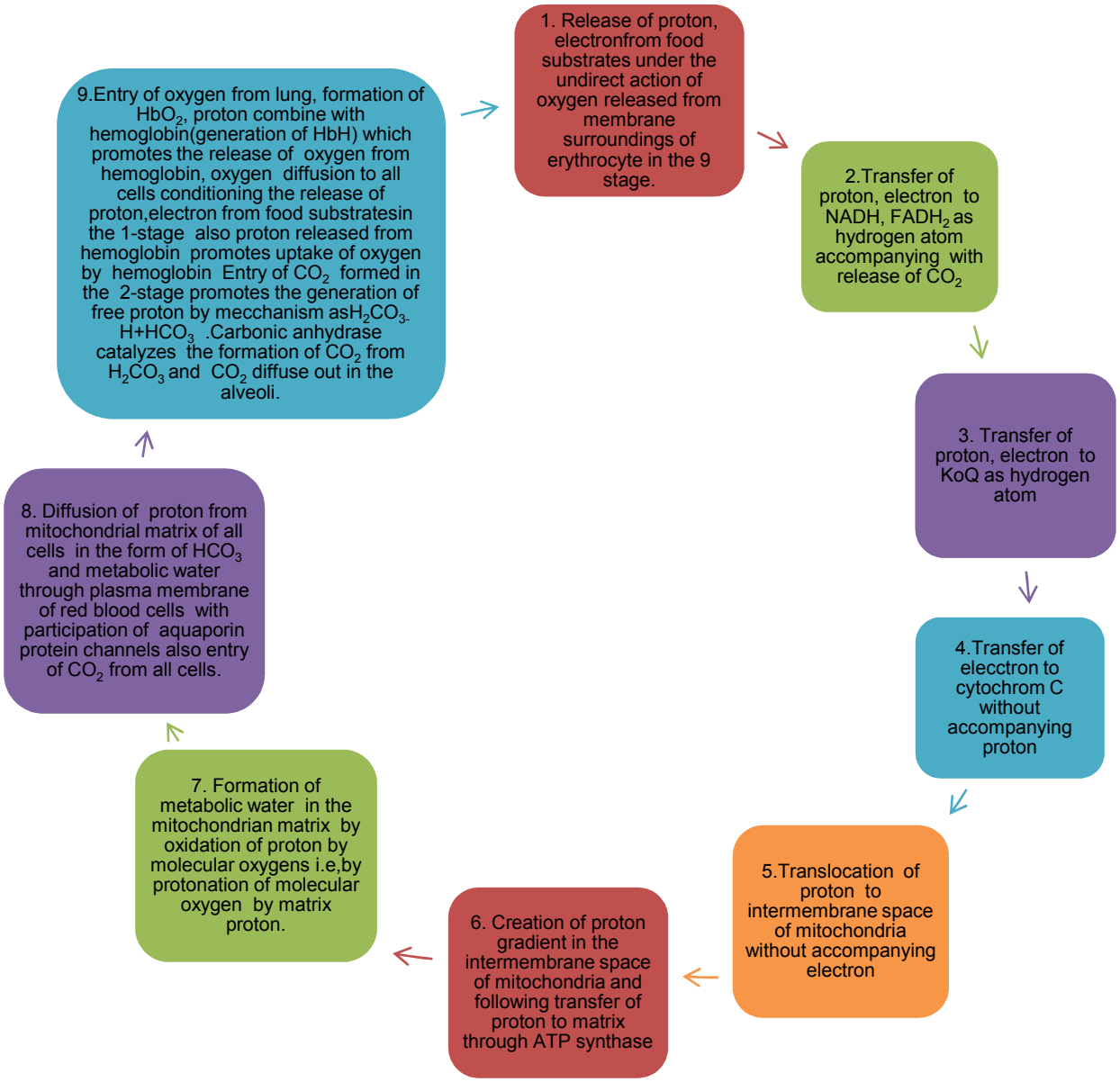
surroundings within the full 9 stepped cycle of proton conductance with subsequent decrease of synthesis of gastric HCL and synthesis of bicarbonate ions in the pancreatic duct cell, also kidney regulation of proton dependent acid – base balance and respiratory regulation of proton dependent acid – base balance and biosynthesis of pyrimidine ribonucleotides.



RESULTS AND DISCUSSION

The explanation of biological significance of released protons from erythrocyte membrane surroundings within in the full 9 stepped cycle of proton conductance is one of very interesting aspects of Modern medicine. By our suggestion the biological significance of released protons from erythrocyte membrane surroundings within in the full 9 stepped cycle of proton conductance have been appeared as participation of protons by including in the composition of H_2CO_3 (carbonic acid) and bicarbonate ions in the synthesis of gastric HCL and in the synthesis of bicarbonate ions of pancreatic duct cell, also in the kidney regulation of proton dependent acid – base balance and in the respiratory regulation of proton dependent acid – base balance. In such way may be say that HCO_3 (bicarbonate ions) and hydrogen ions (proton) are derived from carbon dioxide and water molecules, which formed within the full cycle of proton conductance, which conducted as follows as the second stage, where formed CO_2 and the seventh stage, where formed metabolic water - H_2O in the result of oxidation of protons by activated oxygens. Carbon dioxide and water, which enter to all cells have contained protons released from food substrates and repackaged in the erythrocyte membrane surroundings, released from this. Beside all this, protons released from erythrocyte membrane surroundings by incorporating in to composition of HCO_3 (bicarbonate ions) have been participated in the biosynthesis of pyrimidine ribonucleotides, which have been conducted as ATP + HCO_3 + glutamine + H_2O = carbamoyl phosphate, carbomoylphosphate + aspartate = carbamoyl aspartate, carbamoyl aspartate = H_2O + dihydroorotate, dihydroorotate + quinine = orotate, orotate + PRPP = orotidine monophosphate (OMP), OMP = CO_2 + uridine monophosphate (UMP). Protons released from erythrocyte membrane surroundings is mostly transported within HCO_3 (bicarbonate ions) and H_2CO_3 (carbonic acid).

A. The cellular mechanism responsible for synthesis of gastric HCL with participation of protons, released from erythrocyte membrane surroundings

1. Carbon dioxide (CO_2) diffuses into the gastric parietal cells

2. Carbon dioxide (CO_2) combines with water and formed H_2CO_3 (carbonic acid)
3. H_2CO_3 (carbonic acid) dissociates into HCO_3 (bicarbonate ions) and hydrogen ion (H+)
4. HCO_3 (bicarbonate ions) are transported back into the bloodstream
5. H+-K+ exchange proton pump moves H+ into the duct of the gastric gland and K+ into the parietal cell
6. Chloride ions diffuse into the gastric gland duct.

In such way hydrogen ions (proton) derived from carbon dioxide (CO_2) and water have been participated in the synthesis of HCL.

B. The cellular mechanism responsible for secretion of HCO_3 (bicarbonate ions) in pancreaswith participation of protons, released from erythrocyte membrane surroundings.

Carbon dioxide and water, which entered the pancreatic duct cell have contained protons, released from food substrates and repackaged in the erythrocyte membrane surroundings and released from this.

1. Water (H_2O) and carbon dioxide (CO_2) combines to form H_2CO_3 (carbonic acid)
2. H_2CO_3 (carbonic acid) dissociates to form HCO_3 (bicarbonate ions) and hydrogen ion (H+)
3. Hydrogen ion (H+) are exchanged for Na ions
4. HCO_3 (bicarbonate ions) are transported into the intercalated ducts in exchange for CL ion.

C. The cellular mechanism responsible for respiratory regulation of proton dependent acid – base balance with participation of protons, released from erythrocyte membrane surroundings.

1. Water (H_2O) and carbon dioxide (CO_2) combines to form H_2CO_3 (carbonic acid) within lung capillary blood circulation
2. H_2CO_3 (carbonic acid) dissociates to form HCO_3 (bicarbonate ions) and hydrogen ion (H+)

Carbon dioxide and water, which entered the lung capillary blood circulation have contained protons, released from food substrates and repackaged in the erythrocyte membrane surroundings and released from this.

D. The cellular mechanism responsible for kidney regulation of proton dependent acid – base balance with participation of protons, released from erythrocyte membrane surroundings.

1. H+ combines with HCO_3 (bicarbonate ion) to form H_2CO_3 (carbonic acid) within kidney peritubular capillary blood circulation
2. H_2CO_3 (carbonic acid) is converted into water (H_2O) and carbon dioxide (CO_2)
3. In the tubular cells carbon dioxide (CO_2) combines with water (H_2O) to form H_2CO_3 (carbonic acid)
4. H_2CO_3 (carbonic acid) dissociates to form HCO_3 (bicarbonate ions) and hydrogen ion (H+)
5. Byantiport mechanism H+ is secreted into filtrate in exchange for Na from the filtrate

In such way carbon dioxide and water, which entered the kidney peritubular capillary blood circulation have contained protons released from food substrates and repackaged in the erythrocyte membrane surroundings and released from this.

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