Volume 3, Issue 4, April - 2025
ISSN (E): 2938-3781

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

BLOOD BIOCHEMISTRY

Fatima Sharipovna Nazarova
Samarkand State Medicine University
Medical Biology and Genetics Department

Abdurakhimova Sevinch
Samarkand State Medicine University 2nd Year Student

Abstract
Blood man organism internal environment is considered and, in the body, many biochemical processes done on the rise participating environment is considered. Blood biochemistry to study important importance profession Blood main structural parts blood plasma and shaped from elements organization found. This indicator hematocrit indicator is considered.

Keywords: Plasma, albumin globulin, hemoglobin, shaped elements, erythrocytes, platelets, leukocytes, neutrophils basophils, eosinophils, monocytes.

Introduction

Research Purpose: Blood-based two from part organization found is considered
- PLASMA
-SHAPED ELEMENTS
PLASMA - blood liquid part 55-60% INI is being investigated does Blood Plasma Biochemical Composition
Blood plasma is of blood liquid part is , its in the composition various biochemical substances available . Below plasma main biochemical composition about information given :
Plasma main part water organization does
90-92% of plasma organization does .
Substances solubility provides and blood size hold stands .
Plasma proteins (6-8%)
Plasma in the composition occurring main proteins :
Albumins (~60%) – osmotic pressure hold stands , substances transportation task will do .
Globulins (~ 35 %) – immunoglobulins (antibodies) enters and in immunity participation will reach .
Fibrinogen (~4%) – blood coagulation in the process important role plays .
Blood plasma in the content non-protein organic compounds that is Non-protein organic substances
Glucose – the main energy source (~3.5-6.1 mmol/L).
Urine and creatinine – metabolism as a result harvest to be waste products .
Lipids (cholesterol , triglycerides , phospholipids) – cell membranes structural parts .
Blood plasma in the content salts (electrolytes) Plasma in the content important ions: Na^+ (sodium) – water balance and blood pressure controls (~135-145 mmol/L).

Volume 3, Issue 4, April - 2025
ISSN (E): 2938-3781

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

K^+ (potassium) – heart and muscles in operation significant (~3.5-5.0 mmol/L).
Ca^{2+} (calcium) – bones strength and blood coagulation in the process participation reaches (~2.2-2.6 mmol/L).
Cl^- (chloride) – in the body acid-base balance maintains (~96-106 mmol/L).
HCO_3^- (bicarbonate) – blood pH level stabilizes (~22-28 mmol/L).
Blood in the plasma hormones and enzymes
Hormones (insulin, adrenaline, thyroxine) and others) metabolism Enzymes (amylase , lipase) substances exchange order puts .
BLOOD PLASMA in the content from gases main following gases occurs
O_2 (oxygen) – mainly erythrocytes through transported , but in small quantities also dissolved in plasma without becomes CO_2 (carbonate anhydride) – mainly bicarbonate in the form of transported .
Blood plasma biochemical composition organism general status reflection brings and various diseases in determining important diagnostic importance has .
Blood shaped elements :
Erythrocytes – middle two from the side thin disc -shaped red colored nuclear-free cells . Such form cell the surface expand , gas exchange improves . Their size very small is , of a millimeter out of a thousand one to the part correct comes . 6 million in 1mm3 of blood , an average of 5 million piece erythrocyte will be .
Erythrocytes in the content main hemoprotein was substance this hemoglobin is considered . hemoglobin initially in pronormocytes synthesize begins hemoglobin synthesis First, heme is synthesized .
in fibroblasts synthesized initially in mitochondria synthesized and below don't go it will get smaller in the future
SUCCINYL-CO + Glycine = delta amino levunilate acid ___> Porphoblinogen -->
4Porphoblinogen (-nh3)-> Uroporphinogen (4Co2)-> Coproporphinogen (-CO2,H) Protoporphinogen
(-6H)-> protophorphyrin+Fe =======GEM
Heme is an iron (Fe) atom . own inside received complicated organic compound . It is called a porphyrin. ringed to the structure Heme is found in the body . various enzymes and proteins in the composition occurs , especially hemoglobin , myoglobin and some important in enzymes (e.g. , cytochromes) structural part is considered .
Gem's main tasks :
Oxygen tie and transportation
Electrons transport (cytochrome enzymes via)
Some oxidation-reduction in reactions participation to grow
Hemoglobin
Hemoglobin is red blood red blood cells (erythrocytes) oxygen , occurring to transport specialized protein . It contains four heme groups own inside tetramer structure Each heme molecule has one oxygen molecule tie takes , so , one hemoglobin four oxygen molecule transport possible .
Hemoglobin main tasks :
Oxygen from the lungs to the tissues to deliver

Volume 3, Issue 4, April - 2025
ISSN (E): 2938-3781

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

Carbonate carbon dioxide (CO_2) from tissues to the lungs take to go
Blood pH balance storage
Differences and dependency
Gem is hemoglobin structural part , then hemoglobin complete functional be can't .
Heme from hemoglobin outside other important biological also occurs in molecules .
Iron in heme The main element is oxygen . tie for necessary .
If a gem or hemoglobin synthesis if broken , anemia , porphyria , or hemoglobinopathies such as diseases development possible .
Gem and hemoglobin is blood and oxygen transportation in the process important role playing molecules .
Leukocytes (white blood cells) about general information
Leukocytes are immune system main cells becomes the organism infections , viruses , bacteria and other harmful from factors protection They do . bone in the marrow harvest will be and in the blood and lymphatic in the system around walks .
Leukocytes main tasks :
Protection – bacteria , viruses, fungi and other to microorganisms against fight
Inflammation processes management
To the body fallen harmful from substances cleaning
Antibodies working release
Leukocytes types
Leukocytes two main to the group divided into :
1. Granulocytes (granular leukocytes)
These cells in the cytoplasm granules are available is , their task to pathogens against protection to do .
Neutrophils – to bacteria against fights , the most many occurring leukocyte type (50-70%).
Eosinophils – allergic reactions and to parasites against fights .
Basophils – inflammation and allergic in processes participation histamine separates .
Inflammation processes passing at the time basophils from the composition histamine mediator working will be issued and eosinophils to work falls histamine working since the release after blood in the veins endothelium size shrinks blood in the vein pressure increases blood vein expands and blood from the veins initially small neutrophils inflammation to the hearth goes later mediators under the influence blood vein on the wall basal from the gel state hall to the situation passing by remains they among leukocytes other types extreme begins and to the organism fallen alien from a particle protects
THROMBOCYTES biochemical composition as follows :
Platelets biochemical composition
Platelets – blood coagulation in the process participation to the core has not been blood cells is , their main task blood to leave stop and vein the walls protection Biochemical in terms of platelets following structural from parts consists of:

1. Water

Platelets main part water (about 90 %) This cell various biochemical processes for important environment become service does .

Volume 3, Issue 4, April - 2025
ISSN (E): 2938-3781

2. Proteins

In platelets various proteins there is are , they are blood coagulation and cellular in activity important role plays :

Actin and myosin – platelets shape change and movement provides .

Thrombin receptors – blood coagulation in the process thrombin with mutual impact does .

Fibrinogen – from plasma coming this protein platelets with bound , blood in the evening participation will reach .

Thrombospondin – blood coagulation process order puts .

Von Willebrand factor (vWF) – platelets blood vein to the wall adhesion provides .

3. Lipids

Platelets membrane phospholipids and from other lipid substances consists of :

Phosphatidylserine – blood coagulation process activates .

Phosphatidylinositol – secondary signals harvest does and platelet activity manages .

Cholesterol – membrane strength keeps .

Arachnid acid – prostaglandins and thromboxane A_2 formation in being participation will reach .

4. Carbohydrates

Platelets on the membrane glycoproteins and glycolipids there is are , they are platelets blood vein to the wall to stick and each other with to connect help gives .

5. Inorganic substances

In platelets various minerals and ions there is :

Calcium (Ca^{2+}) – blood coagulation reactions activates .

Magnesium (Mg^{2+}) – platelets function order puts .

Potassium (K^+) and Sodium (Na^+) – the cell's electrochemical balance keeps .

6. Biological active substances

platelets special granule and vesicle inside various to substances has :

Serotonin – blood veins narrowing , blood to leave to stop help gives .

Thromboxane A_2 – platelets activates and veins narrows .

ADP and ATP – platelets to each other adhesion encourages .

Lysosomal enzymes – platelets after death then decomposition processes manages

Blood shaped elements biochemistry when broken come outgoing diseases

Research Methods

Blood shaped elements – erythrocytes , leukocytes and platelets – specific biochemical processes based on own functions If their composition or activity if broken , different diseases development possible .

1. Erythrocytes biochemistry when broken come outgoing diseases

Erythrocytes oxygen in transportation main role plays . Their in the content hemoglobin , lipids , enzymes or ions when broken following diseases to the surface comes :

Anemias (anemia)

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

Volume 3, Issue 4, April - 2025
ISSN (E): 2938-3781

Iron deficiency anemia – hemoglobin synthesis for necessary iron deficiency anemia because of to the surface is coming.
Megaloblastic anemia – B_{12} and folate acid shortage as a result erythrocytes mature It won't be possible.
Hemolytic anemia – red blood cells early decomposition because of to the surface (e.g. , G6PD enzyme deficiency , thalassemia , sickle cell disease) cellular anemia).
Polycythemia (high levels of erythrocytes) increase)
Primary polycythemia – bone in the marrow erythrocytes out of the norm more than working is released .
Second level polycythemia – oxygen deficiency (for example , height) exit , heart or lungs diseases) as a result to the surface is coming .
Erythrocyte membrane and enzymes when broken
Spherocytosis – erythrocytes membrane structure changes , they fast breaks down .
Favism – G6PD enzyme deficiency because of erythrocytes oxidation to stress unbearable will be

2. Leukocytes biochemistry when broken come outgoing diseases

Leukocytes immune system main cells is , their number or composition if it changes , different to infections tendency increases or immunity system wrong works .
Leukopenia (low white blood cell count) decrease)
Agranulocytosis – granulocytes (especially neutrophils) are very decreasing departure as a result organism to infections unbearable become remains .
Leukocyte enzymes deficiency – lysosomal enzymes less if bacteria no to do it gets harder .
Leukocytosis (leukocytes) increase)
Infection diseases – bacterial or viral in infections is observed .
Leukemias (white blood diseases) – bone in the marrow uncontrolled leukocytes working release as a result develops (myeloid and lymphoid forms there is).
Autoimmune diseases
Lupus, rheumatoid arthritis – leukocytes wrong immune answer to give as a result own to the cells attack to do with It's going to happen .

3. Platelets biochemistry when broken come outgoing diseases

Platelets blood coagulation and blood to leave at a standstill main role plays . Their number and biochemical composition when broken blood to leave or thrombosis development possible .
Thrombocytopenia (low platelet count) decrease)
Idiopathic thrombocytopenic purpura (ITP) - immune system platelets no does , as a result blood to leave danger increases .
Aplastic anemia – bone marrow platelet working take out can't .
DIC (diffuse vein inside coagulation syndrome) – platelets and coagulation factors too much outside usage because of develops .
Thrombocytosis (platelets) increase)
Primary thrombocytosis – bone marrow out of the norm more than platelet working produces , as a result thrombosis danger increases .

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

Volume 3, Issue 4, April - 2025
ISSN (E): 2938-3781

Second level thrombocytosis – chronic inflammation , operations or tumors as a result develops .
Blood coagulation system disorders
Glycoprotein IIb/IIIa deficiency – platelets to each other adhesion will be broken .
Von Willebrand disease – platelets blood vein to the wall adhesion ability decreases .
Hemophilia – blood coagulation factors shortage as a result blood to leave increases .

Summary:
Blood shaped of elements biochemistry when broken blood bleeding (hemorrhagic) diseases), thrombosis , immunity decrease or uncontrolled leukocyte increase such as serious diseases development This is possible . of violations prevent to take vitamin and mineral deficiencies for eliminate to infections against protection and bone marrow activity following to go important.Blood plasma with related biochemical diseases and the following is counted
HEMOPHILIA- in this blood thickener factors with related disorders reflection will this factors following factors is considered :
factors 8 and 9 with related hemophilia
VON WILLEBRAND DISEASE:this missing factor in the name because of this disease come comes out
Plasma with related sick people mainly blood coagulation protein balance electrolytes and lipids with related will be

References

1. ФШ Назарова, ГХ Назарова, ЗБ Исламова, «БИОЛОГИЧЕСКИЕ И ФИЗИКО-ХИМИЧЕСКИЕ СВОЙСТВА АЗКАМАРСКОГО БЕНТОНИТА И ЕГО ИСПОЛЬЗОВАНИЕ КАК ИСТОЧНИКА МИНЕРАЛЬНОГО ПИТАНИЯ», Дата публикации 2021, Журнал «Экономика и социум», Номер 4-2 (83), Страницы 244-251, Издатель ООО «Институт управления и социально-экономического развития».
2. Фатима Шариповна Назарова, «ЭПИДЕРМАЛЬНЫЕ ОБРАЗОВАНИЯ КАК ИНДИКАТОРЫ ЗАГРЯЗНЕНИЯ ОКРУЖАЮЩЕЙ СРЕДЫ ТЕХНОГЕННЫМИ И ГЕОХИМИЧЕСКИМИ ИСТОЧНИКАМИ», Дата публикации 2023/11/1, Журнал «Innovations in Technology and Science Education», Том 2, Номер 15, Страницы 680-690.
3. SS Abdurakhimova FS Nazarova, «Почки и мочевыводящие пути и их заболевания», дата публикации 2024/4/8, Журнал «Образование и Наука XXI века», Номер 49-1, Страницы 131-138, Издатель: Научно-образовательный электронный журнал.
4. Fatima Sharipovna Nazarova, Sevinch Salimovna Abdurakhimova, «KIDNEY AND URINARY TRACT AND THEIR DISEASES», Дата публикации 2024/4/6, Журнал: Western European Journal of Medicine and Medical Science, Том 2, Номер 4, Страницы 32-36.
5. Fotima Sharipovna Nazarova, Ruhshona Nurbekovna Kuvondikova, «TOKSOPLAZMOSIS GONDII», Дата публикации 2024/3/22, Журнал: British Journal of Global Ecology and Sustainable Development, Том 26, Страницы 56-59.
6. Fatima Sharipovna NAZAROVA, «ECOLOGICAL GROUPING OF PLANT PHYTONEMATODES.», Дата публикации 2024/3/5.

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

Volume 3, Issue 4, April - 2025
ISSN (E): 2938-3781

7. Fotima Sharipovna Nazarova, Khidirnazarov Muhammad, «Parasitic phytonematodes», Дата публикации 2024/2/23, Журнал: Global Scientific Review, Том 24, Страницы 63-68.
8. Fotima Sharipovna Nazarova, Jasmina Khalimova, «PARASITIC HELMINTHS AND THEIR BIOCHEMICAL AND PHYSIOLOGICAL CHARACTERISTICS», Дата публикации 2024/2/22, Журнал: Web of Teachers: Inderscience Research, Том 2, Номер 2, Страницы 137-140.
9. Фатима Шариповна Назарова, Жасмина Халимова, «ПАРАЗИТНЫЕ ГЕЛЬМИНТЫ И ИХ БИОХИМИЧЕСКАЯ И ФИЗИОЛОГИЧЕСКАЯ ХАРАКТЕРИСТИКА», Публикация данных 2024 год, Журнал: Восточный ренессанс: инновационные, образовательные, естественные и социальные науки, Том 4, Число 3, Страницы 656-660, Издатель ООО "Восточный Ренессанс".
10. Klinik immunologiya va allergologiya-L.A.Yarlin
11. Klinik gemotologiya-G.A.Aleeksev
12. Klinik biokimyo-M.A.VASILEEVA

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8