ESTIMATION OF BLOOD GROUPS AND ASSESSMENT OF THEIR CHEMICAL AND NUTRIENTS CONTENTS.

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ABSTRACT:

In the early 1900s, scientists discovered that antibodies and antigens are heritable, opening the door to the study of possible connections between blood type and food. As time went on, scientists were able to deduce the biosynthesis routes by chemically identifying the carbohydrate structure of surface antigens. In order to identify the various blood types, a research was set up to chemically examine the blood of volunteers. A person's susceptibility to disease might vary depending on their blood type. There is a chemical reaction that occurs in the blood when it comes into touch with certain foods, particularly the so-called ekt lectin getirmek protein. Different biochemical compositions of blood group antigens and their associations with illness risks suggest these variances may be useful markers for identifying patients in need of dietary intervention techniques or drugable targets.

Keywords; Blood groups, Antigen, nutrients

INTRODUCTION

The "blood group" word describes whole blood group system, that contains (RBC) antigens and Several genes, which may be allelic or closely related and located on the same chromosome, control the sensitivity of the organism. The word "blood type" means a certain reactivity arrangement to testing of antisera within a given system. In addition to transfusion-related difficulties, our knowledge of blood groups has expanded over time to identify specific illness connections with surface antigens of RBC. (Karl Landsteiner) attributed on developing system of blood group (ABO) in 1900. His huge research on serologic, built upon basic although powerful technical thinking, and the result identify the protocols of subsequent transfusion, compatibility testing and O, A and B major blood group types. Through year 1930, he received Noble Prize for this finding (Owen *et al*., 2000).

In 29 blood group systems this (ABO) blood group system exists the extremely significant Four (A, B, O, & AB) antigens made this system (Daniels *et al*., 2004). Many researchers have also explored the biochemical as well as structural properties of antigens of this system. The ABO blood type genes were discovered on chromosome 9 (Watkins , 1980; Bennett *et al*., 2016), structures were formed and cloned by (Yamamoto *et al*., 1995). So this was done genetic analysis of blood type ABO antigen by the use of method molecular biology (Ferguson *et al*.,1976).

MATERIAL AND METHODS

In order to get blood from different individuals samples of blood were collected in sterilized bottles duly labeled with name and age of human subject.

Organic solvents were used to disinfect the subject's finger tip. It took a daring piercing to open up the veins and allow the blood to flow freely. Only a little amount of blood was taken, and even that was diluted with 60% saline. A tiny slide had around two droplets of suspension poured on it. Both drops of cell suspension were combined with serum, but only one contained anti agglutinins and the other had anti B serum. Cells are allowed to agglutinate for a few minutes before being examined under a microscope to see whether they have clumped together. The presence of immunological responses in the serum and cells will be made obvious after cell clumping.

RESULTS AND DISCUSSION

Results regarding various blood groups are given in tables 1 and 2

Table 1. Analysis of bloods

Red blood cells	**Sera**	
(Groups)	Anti-A	Anti-B
O	–	–
A	+	–
B	–	+
AB	+	+

The above illustrates the reaction that occur with each of the four different types of blood**.**

Table 2. blood groups system

Symbol	**Name**	**Number of Gene**	**Name**	**Chromosome antigens**
ABO	ABO	4	ABO	9
JK	Kidd	3	SlC14A1	18
FY	Duffy	6	FY	1
LE	Lewis	6	FUT3	19
KEL	Kell	25	KEL	7
LU	Lutheran	20	LU	19
Rh	Rhesus	49	RhD, RhCE	1
P1	P	1	P1	22
MNS	MNS	43	GYPA, GYPB, GYPE	4

On the red blood cells surface existence of antigen, A and B, as well as the anti-body in the serum of both anti-B and A antibodies, determines ABO blood type. So, the A blood type

contains an antigen and serum contains antibody B. In A.B blood type Antigen A with anti an anti-body found, and B antigens present into AB type of blood, there is not any anti-body are present. The O type of blood contains anti A and anti-body B, but antigens are not found in this type. These anti-bodies A and B typically IgM in nature which are not found in neonates however do arise into life's 1st year. This is probable that these anti-bodies created in response to dietary as well as ecological antigen (plant antigens, viral or bacterial) that structurally like A and B antigens (Andersson *et al*., 1989).

More than 300 antigens are now represented by 33 blood group systems, according to a list produced by the International Society of Blood Transfusion (Logdberg et al., 2004; Logdberg et al.,2010). Most have already been subjected to cloning and sequencing. Except for XG and XK, which are inherited from the X chromosome, and MIC2, which is shared by the X and Y chromosomes, all of these blood group systems are determined by autosomal genes. Polymorphisms in the amino acid sequence (such rhesus Rh and Kell) are what define antigens, which may be glycoproteins, glycolipids, or integral proteins (e.g., ABO). In the preceding line, we discussed many of the most important classifications (Tables 1-2).

Due to the presence of anti-A and/or anti-B antibodies in the serum of every human over the age of six months, the ABO system remains the most crucial of the 33 systems when it comes to blood transfusion and organ transplantation. Type A blood carries an antibody in its serum that attacks B blood, whereas type O blood has neither the A nor the B antigen but has antibodies to both.

To create ABO blood type antigens, H-antigen must first be made. It's found in every RBC and has nothing to do with the ABO system. H-antigen is not expressed on the red blood cells of HH individuals since they have two copies of the H gene. It's not often that you see a phenotypic as peculiar as the Bombay. The lack of antigens A and B may be inferred from the absence of H-antigen, since the latter acts as a precursor to these molecules. However, not only antigen A and B isoantibodies but also antigen H isoantibodies are produced by the human population.

Landsteiner and Levine established the MNS antigen system in 1927. The two genes responsible for this mechanism are named Glycophorin A and Glycophorin B. The LM and LN alleles, which are co-dominant, govern the blood group via an autosomal locus on chromosome 4. It is

rare for M and N-specific antibodies to be of the IgG subclass and associated with transfusion reactions.

There are four possible combinations of allelic antigens in the Lutheran system, and each one corresponds to a single amino acid variation in the Lutheran glycoprotein on chromosome 19. In most circumstances, antibodies against this blood group are not considered to be clinically significant because of how seldom they occur.

These erythrocyte antigens are distinguished by an immunological antibody termed anti-K and rank third in terms of immunogenicity, after the ABO system and the Rh system. It was found in Mrs. Kellacher's serum where it was discovered for the first time. Her hemolytic responses were caused by a reaction to the erythrocytes in her newborn child's blood. Since then, 25 Kell antigens have been found. Both severe hemolytic disease of the foetus and newborn (HDFN) and hemolytic transfusion reactions are caused by anti-K antibodies (HTR)

Proteins and carbohydrates that are connected to lipids or proteins make up blood type antigens, which are surface indicators seen on red cells. A representation of the membrane components that transport blood group antigens (Reid et al.,1997).

Chemical investigation of the carbohydrate structure of surface antigens in the 1950s was the first step towards elucidating biosynthesis routes. The blood type antigens are encoded by secondary genes, whereas the main genes code for enzymes involved in glycosylation. Oligosaccharide structures specific to antigens are used to identify blood type, and specific enzymes connect sugar molecules to the oligosaccharide chain. Blood group antigens can be found in their soluble form in bodily secretions like breast milk, seminal fluid, saliva, sweat, gastric secretions, urine, and amniotic fluid, in addition to their more common locations on red blood cells, platelets, leukocytes, plasma proteins, specific tissues, and a wide range of cell surface enzymes. Moreover, this is reflected on blood group antigens. Genetic research has recently shown links between blood type antigens and illness susceptibility, as well as the structure of blood type determinants including A, B, H, and Lewis and the enzymes involved for their synthesis.

Combining conventional scientific methods with those of contemporary biochemistry and genetics. Targets for the development of dietary intervention approaches or the identification of targets that are responsive to pharmacological therapy may need more investigation to identify changes in the biochemical composition of blood type antigens (Ewald and Sumner, 2016).

Studies in serology have been done to learn more about the characteristics and relationships between different blood types and serum antibodies. Blood groups were first identified by German physician Karl Landsteiner in the early 20th century. He noticed that certain people's red blood cells clumped together when mixed with the plasma of other people. 1 His classification of the ABO blood types, together with the research of others, established the heritability of antibodies and antigens. In the middle of the 1940s, the antiglobulin test was created to identify antibodies that did not clump together when exposed to a microscope. Concurrently, investigations of antigen specificity by biochemical and genetic methods revealed that oligosaccharide structures were crucial. There was no time between the two of these happenings. Thus, blood type antigens are secondary gene products; the primary gene products are the numerous glycosyltransferases that link the sugar molecules to the oligosaccharide chain. These carbohydrate moieties are recognised as foreign by other people's immune systems, prompting the production of antibodies that target and neutralise them. In 1957, thanks to extensive, arduous, and rigorous scientific investigation, the carbohydrate structure of a human red blood cell (RBC) surface antigen was accurately determined chemically. In 1959, hypotheses were put out on the biosynthetic routes of the known antigens. To think that this was accomplished with the research tools accessible in the middle of the twentieth century is remarkable. 2 Technological progress has accelerated at an exponential rate since then, and the human genome has been sequenced in its entirety. This has led to the identification of tens of thousands of blood type antigens, their classification into more than thirty blood group systems, their cloning and sequencing, and the identification of the genes they express (Cai et al., 2014; Cusak et al., 2013).

The enzymes that these genes need to operate have been identified, and the molecular genetic sequences have been deciphered, but there is still a great deal of research to be done before we have a full picture of the structure, function, and interactions of the antigens that these genes create (Cusack et al., 2013; Salmon et al., 1990).

Blood is perhaps the maximum vital and essential aspect of the human body. Blood is 7-8% of an ordinary human body. Blood in our frame A, B, AB, zero (rh) is a gift as one of the effective or negative organization. Sometimes a drop of blood can create drastic modifications in human lives. Another thing that creates important adjustments in human being lives is nutrients. Different blood companies could make people more or much less susceptible to sure situations. Some blood types recommend that multiplied pancreatic most cancers are related to accelerated chance of blood clotting and coronary heart assault. When the blood comes into contact with positive substances, it is particularly referred to ekt lectin getirmek protein, it produces a chemical reaction (Shachter *et al*., 1973; Hakomori, 1984). Meanwhile type A blood employer has an additional sensitive immune tool, they should always eat sparkling and natural substances. B blood type organization corn, wheat, tomatoes, lentils and bird meat have to be prevented. It is suggested that blood group B should eat inexperienced vegetables, eggs, red meat and occasional-fats milk. The human organism has a daily rhythm that develops depending on physiological activities, vitamins, metabolism events and lifestyles conduct. In the light of these new records, a brand new weight loss plan is proposed and an idea, if human beings are fed according to their blood agencies (temperaments), they'll remove obesity and disease issues (Hosoi, 2008; Larsen et al., 1990).

The ABO blood groups have maximum essential organization structures for transplantation or blood transformation medication. Though, the evolutionary importance of 11 . ABO blood group gene and its heterogeneity remain unidentified. An Integrative technique to attain perceptions to the significance of the evolution based system of ABO blood group genes, which includes the one associated not only phylogenetically but additionally functional. Experiment formed a key table that compare Amino Acid collection pattern of the ABO blood group gene programmed, glycosyl transferases through GalNAc, A or galactose B sensitivity and allocated A or B sensitivity to character ABO blood group genes of many species. Hence moving back to past, easy arrangement contrasts. . Composed genome evidences and polymorphic investigation, the project exposes initial A and B blood group gene arrangements present in developmental and potential anallelic occurrence with each gene orders of more or less mammalian class. Progression might have repressed rank quo with two neutrals, beneficial A and B blood group genes in maximum invertebrates endorsed A or B alteration through Amino Acid rejoin/exchange. A and B allomorphism must occurred in usual descendants of apes and bacterial ABO genotype established over vertical or horizontal genetic factor diffusion in 2 distinct companies coding glycosyl transferases by wonderful sugar specificities (Watkins, 1995).

The principle in the back of the blood-kind weight loss program suggests ABO blood group famous inherited nutritional habit that adheres to weight loss program specifically to at least one blood group. It can improve overall fitness and decrease threat of cardio metabolic and other diseases. Specially, people having O type blood group are called ‘Hunter’, and are suggested preservative primarily vegetarian food regimen. Persons having A type blood group are defined as bucolic so, suggested to comply with primarily lactovegetarian food regimen. Weight loss strategies for people that possess B type are called ‘Nomad’ and endorse extreme consumption of dairy goods. While Persons by AB blood type are called 12.

Enigma' recommended stick to in among eating regimen among A and B type diets (Poretz and Watkins, 1972; Watkins, 1980).

People with improved adherence score of type A blood group, food plan have reduced diastolic blood strain. Lower waist circumference changed into determined in persons with better adherence to the type B and AB type diets. Afterwards 6 month dietary interference, individuals through expanded adherence to the type A and type B diets had additional reductions in waist circumference and BMI correspondingly. Persons with growth in type O weight loss plan adherence, present decrease in waist circumference and BMI. Though, identical diets with the corresponding ABO genotype of every person did not change the effect length of any of these blood group system at baseline (Adamo and Whitney, 2002).

No indication presently occurs to authenticate the supposed health benefits of blood type diets. To authenticate those claims, research are required to examine the health effects among members adhering to a specific blood type weight loss plan 'experimental organization' and contributors ongoing an extensive diet 'control organization' in a particular blood type population (Cusack *et al*., 2013).

Genotype of blood group ABO does not change any association in blood type diets and biomarkers of aerobic metabolic elements in over weight adults. It suggests a principle at the back of this weight loss plan is not always authentic (Daniels *et al*., 2014).

CONCLUSION

There is abundant data to indicate that illness risks are associated with the chemistry of blood, including the categorization of blood groups, the structures of A, B, H, and Lewis determinants, and the enzymes that generate these structures. [Citation needed] It has been shown beyond a reasonable doubt that the blood type is determined by oligosaccharide structures; hence, it is fair to think that disparities in the biochemical profiles of people may also be connected to differences in blood type, antigens, and secretor status.

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