



Short Communication

Examination and evaluation of different blood groups among the undergraduate students of Govt. College Shahpur in north western Himalayan region of India

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Abstract

The present research has been undertaken to find out the blood group of zoology students of Govt. Degree College Shahpur in the north western Himalayan region of India. It was performed in the department laboratory of Zoology at Govt. Degree College Shahpur during the period Sept.-Dec., 2021. 50 undergraduate sample students were included in the present research following systematic random sampling. Antigen-antibody agglutination was performed by slide method to find out the ABO and Rh-D blood groups amongst the sample students. The result showed the dominance of different blood group among the sample students in following order $B^+ < AB^+ < A^+ < O^+ < B^- < A^-$.

Keywords: Blood groups, antigens, antibodies, north western Himalayan region, ABO and Rh-factor etc.

Introduction

The Knowledge about human blood groups was fragmentary and turbid till the year 1900. An Austrian scientist “Karl Landsteiner” in the year 1901 detected A, B and C blood groups. C has been afterward renamed as O. The letter O was taken from “ohne” a German word signifying without or zero and barren in English. The ABO system discovered by Karl Landsteiner to explain the phenomena of red blood cell agglutination is well-documented hypothesis¹.

Karl Landsteiner was bestowed Nobel prize for medicines in 1930. Similarly AB blood group was uncovered by A.VanDecastello and A. Sturli in the year 1902. Later in 1939 Philip Levine and R.E. Stetson tracked down Rhesus (Rh) system however it was named by Karl Landsteiner and Alex Weiner in 1940. In 1912 Roger Lee framed the term universal recipient for blood group AB and universal donor for blood group O. After 1901, more than 20 different blood group systems have been identified but the ABO and Rhesus system are clinically the most important².

The ABO system of human blood group comprises of 4 blood groups: A, B, O and AB on the basis of A and B antigens. Similarly absence/presence of antigen D bifurcate the human blood groups into Rh⁻ and Rh⁺. Thus overall we are having 8 different kinds of blood groups; A⁺ and A⁻, B⁺ and B⁻, O⁺ and O⁻, and lastly AB⁺ and AB⁻. Ethnically the most common blood groups are African American 47% O⁺, 24% A⁺ and 18% B⁺, Latin American: 53% O⁺, 29% A⁺ and 9% B⁺. Asian: 39% O⁺, 27% A⁺ and 25% B⁺, Caucasian 37% O⁺, 33% A⁺ and 9% B⁺

among the human population³. Similarly in most of recent ethnic groups A and B blood groups are dominant whereas O is dominant in old races. The evolution and emergence of different human blood groups is still not crystal clear however according to one hypothesis AB used to be the first blood group which over a period of time has diverged into all other blood groups⁴. ABO and Rh system are of prime importance during blood transfusion⁵ along with Rh system being important during second pregnancy if husband blood group is Rh positive and wife blood group is Rh negative as it can lead to “erythroblastosis fetalis”.

Materials and methods

The research under discussion has been carried out in the zoology laboratory *Department of Zoology Govt. Degree College Shahpur*, Himachal Pradesh in the month of Sept-Dec., 2021. The blood samples were taken from the undergraduate zoology students of the college. 50 samples were collected following random sampling. The sample size has been calculated with the help of formula: $n = z^2.pq/d^2$. The blood groups were found by slide methods using anti- A, anti- B and Rh-D antiserum.

Three glass slides were taken and a few drops of blood were drawn in the centre of every glass slide. On these slides anti sera was added with the help of dropper as follows: on first slide anti -A, on slide two anti -B and on slide three anti-D. The blood and these anti sera were well mixed with the help of separate needles and slides were observed for antigen-antibody agglutination.

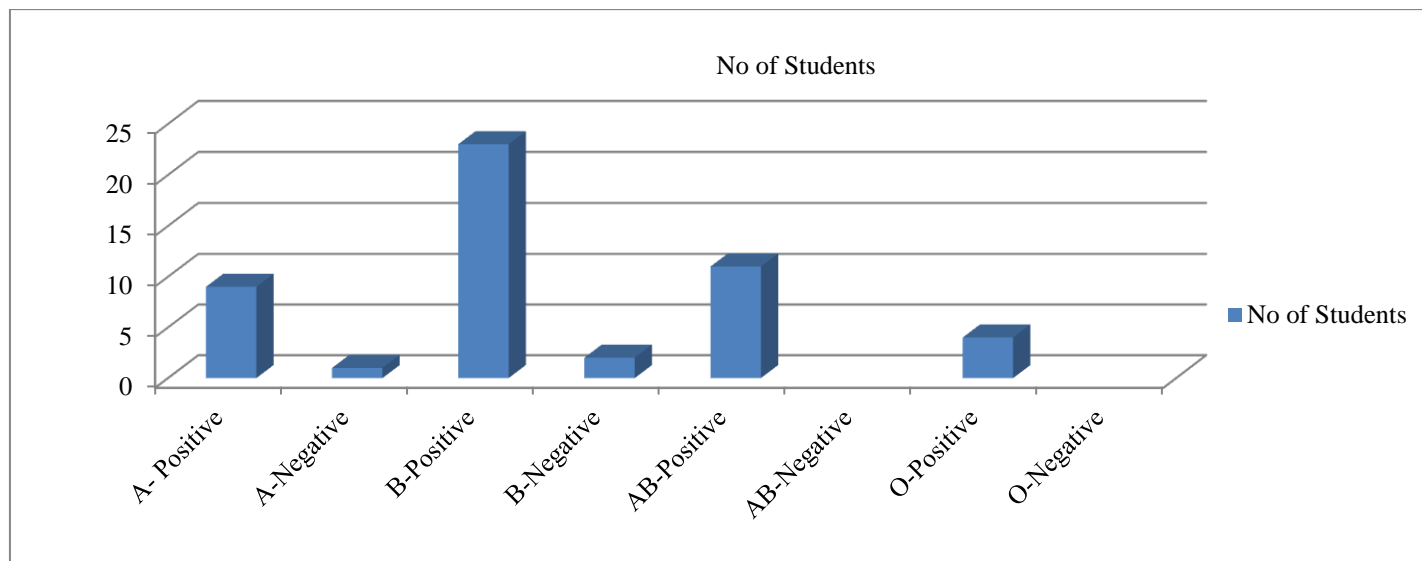


Figure-1: Graph showing no of students having different types of blood groups among sample students of Govt. Degree College Shahpur.

Results and discussion

Among the sample students blood group B⁺ is the prominent as 46% of the students were having this blood group. Similar kind of results with respect to blood group B⁺ has been found in studies conducted⁶⁻⁸. The students with blood group AB⁺ are the next visible blood group as 22% of the students are having this type of blood group. 18 % of the students were having A⁺ and 8% were having O⁺ blood group among the sample students. Also, Rh⁺ factor is dominating over Rh⁻ factor and 94% of the students are having Rh⁺ blood group whereas Rh⁻ blood group was in only 6% of the sample students. The Rh⁻ factor was found in blood group A and B only. 2% of the sample students were having A⁻ blood group and 4% students were having B⁻ blood group (Figure-1). The variation in the blood group frequency globally is mainly attributed to genetic and environmental reasons. The data results of different blood group studies in our sub-continent have shown the more presence of blood group B and O among the human beings⁹. Similar kind of results has also been shown in our study. The frequency of Rh⁺ blood group among Asian is 99%, black 92% and Caucasians 85% respectively¹⁰. The Rh⁺ blood group is more prominent worldwide and also it was also found dominant in study conducted in Srinagar Uttarakhand¹¹.

Conclusion

Thus, it can be concluded that among the students of Govt. Degree college Shahpur blood group B⁺ is the most visible blood groups among the sample students. Also, Rh⁺ is having a greater edge over Rh⁻ blood group. Thus, it could be concluded with 100% authentication that these results are in conformity with other researches in different parts of globe. Recently the importance of ABO blood group system has also been of paramount importance as it is linked to several diseases¹².

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