

SUPPLEMENT TO THE OBSERVED ARRANGEMENT OF BLOOD GROUPS  
"ABO" IN MARIBOR, SLOVENIA AND THE REPUBLICS AND PROVINCES  
OF YUGOSLAVIA

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The good old classical arrangements of nations according to geographic regions with regard to the appartenance to this or that blood group practically almost have no more value, but also those which were actually published several times up to now have no real usable value because of the continually larger population migration. This is practically noticeable especially in applicable transfusiology in larger traffic accidents, in our very region along the highway leading from western Europe through Maribor and from our parts toward the east, when in the hospital the corresponding quantity of stored blood of certain blood groups from donors in our region ist at our disposal and can be counted on. Already some years back we noticed that especially in the summer months the need for stored blood of blood groups (BG) B and AB was larger than in the previous years. This lead to the study of BG Rh and others in donors in Maribor with regard to their appartenance to various nations and nationalities.

In this study blood donors from Maribor and its surroundings were included, i. e. a large area which exceeds the municipal boundaries of the town and includes certain characteristic ethnographic districts, by chance selection as well. A broader study, not published, includes besides BG and Rh D also the Rh phenotype (resp. the most likely genotypes) and M, N, S, s, P, K, Fy and other systems. BG and Rh D will be shown in blood donors divided into five groups according to place of birth:

1. Maribor
2. Maribor - surroundings, where we also count some places respectively blood withdrawal centers from the neighbouring communities of Lenart, Slovenska Bistrica and Radlje ob Dravi which geographically actually terminate our region and have for decades belonged in the blood donation district of Maribor.
3. the remaining Slovenia
4. Croatia, which could especially in its bordering regions resemble the bordering parts of Slovenia in many ways,
5. the remaining republics: Bosnia and Hercegovina, Montenegro, Macedonia. Our reason for deciding on a collection of these republics in one rubric lies mainly in the relatively small number of tested persons - citizens of this or that republic - in relation to the rest, but also in that we truly cover simultaneously a larger geographic and cultural historical region.

12091 persons from all over Yugoslavia were tested. The presence of BG O was established in 31.81 %, of these 81.12 % were Rh D positive and 18.88 % were Rh D negative. BG A was present in 37.25 %, of these 83.06 % were Rh D positive and 16.94 % were Rh D negative, BG B was established in 21.14 % (Rh D positive sere 63.23 %, negative 36.77%),

while BG AB was present in 9.8 % (AB Rh D positive were 83.39 %, negative 16.61%).

In those born in Maribor (1) BG O was present in 32.23 %, in the surrounding inhabitants (Maribor-surroundings) (2) in 27.83 %, in the remaining Slovenia (3) in 43.83 %, among Croatsians (4) in 32.84 % and in the rest of Yugoslavia (5) in 30.42 %.

BG O RhD positive is arranged in rubrics:

1. 80.59 %, 2. 81.24 %, 3. 80.64 %, 4. 83.57 %, 5. 83.51 %, RhD negative: 1. 19.41 %, 2. 18.76 %, 3. 19.36 %, 4. 16.13%, 5. 16.49%.

In BG O considerable percentage deviations were observed in comparison to Maribor (1), its surroundings (2), the rest of Slovenia (3) and Yugoslavia (5).

The number of O RhD positive is larger among Croatsians and the remaining Yugoslavs, which is also expressed in the smaller percentage of O RhD negative in the test regions 4. and 5.

BG A is arranged from 1. to 5. as follows: 1. 39.56 %, 2. 39.54 %, 3. 27.72 %, 4. 31.36 %, and 5. 32.20 %.

A RhD positive are in group 1. 83.57 %, 2. 81.61 %, 3. 84.14 %, 4. 85.14 % and 5. 89.94 %, thus A Rh negative are from 1. to 5.: 1. 16.43 %, 2. 18.39 %, 3. 15.86 %, 4. 14.86% and 5. 10.06 %.

An evident fall of A RhD negative was established geographically from west to east, while more RhD positive are present in the opposite direction.

Subgroups  $A_1$  and  $A_2$  are represented in the proportion:

1. 86.41 % : 13.59%, 2. 83.48 % : 16.52 %, 3. 90 % : 10 %, 4. 83.13 % : 16.67 %, 5. 83.33 % : 16.67 %.

The proportion  $A_1$  Rh D positive towards  $A_2$  Rh D positive is:

1. 87.25 % : 12.75 %, 2. 83.92 % : 16.08%, 3. 91.50 % : 8.50 %, 4. 88.89 % : 11.11 %, 5. 83.33 % : 16.67 %.

$A_1$  Rh D negative towards  $A_2$  Rh D negative are in proportion:

1. 82.86 % : 17.14 %, 2. 80.65 % : 19.35 %, 3. 84.62 % : 15.38 %, 4. 66.67 % : 33.33 %.

The relationship  $A_1$  RhD positive towards  $A_1$  RhD negative is:

1. 81.76 % : 18.24%, 2. 86.98 % : 13.02 %, 3. 79.63 : 20.37 %, 4. 80 % : 20 %.

$A_2$  RhD positive towards  $A_2$  RhD negative: 1. 76 % : 24 %, 2. 84.21 % : 15.79 %, 3. 66.67% : 33.33 %, 4. 50 % : 50 %.

Oscillations which appear in comparing Rh D positive and RhD negative among subgroups  $A_1$  and  $A_2$  are on account of an ever smaller number from 1 to 5.

Group B is present in Maribor (1) in 18.62 %, in the surroundings (2) in 22.77 %, in Slovenia (3) in 19.60 %, in Croatia (4) in 26.27 % and in the rest of Yugoslavia (5) in 24.11 %, thus there is a considerable increase of BG B from west to east.

B RhD positive towards B RhD negative are in the proportion:

1. 82 % : 18 %, 2. 79 % : 21 %, 3. 78.82 % : 21.48 %, 4. 79.84 % : 20.16 %, 5. 79.87 % : 20.13 %.

There are less positive from 1 - 5, Rh D negative are more in the opposite order.

BG AB is present in group 1. in 9.60 %, 2. in 9.87 %, 3.

8.85 %, 4. 9.53 %, 5. 13.26 %:

RhD positive of BG AB are towards AB RhD negative in the proportion: 1. 85.86 % : 14.14 %, 2. 82.62 % : 17.38 %, 3. 78.17 % : 21.83 %, 4. 88,89 % : 11.11 %, 5. 82.50 % : 17.50 %.

A<sub>1</sub>B RhD positive towards A<sub>1</sub>B RhD negative are in Maribor in a proportion of 83.87 %<sup>1</sup>: 16.13 %, in the surroundings 86.05 % : 13.95 %, the small number of tested persons in the remaining groups (3 - 5) as well as the comparison of A<sub>2</sub>B RhD positive and A<sub>2</sub>B Rh D negative allow no credible comparison.

However, the above establishments and calculations are well comprised in our long years of observations of a relatively larger need for blood of groups B and AB during the summer vacation period, in the months with denser traffic, especially through Maribor, since also a significantly larger % of BG AB is present in group 5 and BG B in group 2 than in group 1.

The above data are surely interesting also in paternity affairs, for they can be used for comparison, just as the data of other researchers are compared. They also prove the specific independence and roundedness regarding the comparing of BG and Rh individuals who come from certain geographical regions. For Yugoslavia as a whole it is not possible to present any uniform frequency of BG nor of the RhD factor

#### SUMMARY

In 12091 persons arranged into 5 groups (geographical arrangement acc. to birthplace) blood group (BG) O was ascertained in 31.8 %, BG A in 37.25 %, BG B in 21.14 %, BG AB in 9.80 %. A significantly larger % of BG AB is present in the east of the country and BG B in the surroundings of Maribor. The results have a particular value for the supplying of transfusion institutions with blood of certain BG during the summer vacation period, in the months of denser traffic and the influx of traffic victims in Maribor, but they are also interesting in paternity affairs.

#### ZUSAMMENFASSUNG

Bei 12091 Personen, in 5 Gruppen eingeteilt (geographische Einteilung nach Geburtsort), wurde die Blutgruppe (BG) O bei 31.81 % festgestellt, BG A bei 37.25 %, BG B bei 21.14 %, BG AB bei 9.80 %. Ein signifikant grösserer % von BG AB besteht im Osten des Landes und von der BG B in der Umgebung von Maribor. Die Resultate haben einen praktischen Wert für die Versorgung der Transfusionsinstitution mit Blut gewisser BG während der Sommerferien, in den Monaten mit stärkerem Verkehr und Zufluss von Verunglückten in Maribor, sie sind aber auch für Vaterschaftsangelegenheiten interessant.