ABH Secretor and Lewis Type Frequencies in an Icelandic Series

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The investigation of the secretion of ABH blood group substances in a series of 228 Icelandic individuals resulted in finding that certain ethnic groups in Europe have secretor/non-secretor ratios outside the most often quoted overall figures (Nerell, 1963; Race and Sanger, 1968).

One hundred and eleven of the individuals tested came from two villages, Selfoss (centre 1) and Grindavik (centre 2) not far from Reykjavik. At these two centres the individuals tested were all blood donors but they were random as far as ABO groups were concerned. The samples were tested in London for ABO, Lewis, and secretor status.

The remaining 117 samples (centre 3) consisted of patients and hospital staff (doctors, nurses, and medical students) from the University Hospital Reykjavik. Birth places of these individuals are spread all over the country and only about 35% were born in Reykjavik. The blood and saliva samples were tested in Reykjavik. The red cells were tested for ABO groups but no Lewis typing was carried out.

Methods

The ABO groups, Lewis types, and tests for ABH in saliva were determined as described in the preceding paper (Lincoln and Dodd, 1972).

Results and Discussion

The results obtained for the frequencies of secretors and non-secretors at each centre are shown in Table I. It will be seen that the overall frequency of the non-secretor phenotype reaches the very high figure of 41.23%. This high figure is in part, due to the large number of non-secretors found at centre 2. The average figure for the other two centres is 35.27%.

A possible explanation for the higher percentage of non-secretors at centre 2 (Grindavik) is that a considerable number of the donors from this

village are more closely related than those from the village of Selfoss (centre 1). Grindavik is an old fishing village, but Selfoss is a country village where people have been settling for the last 30 years and are still moving in from different places. Moreover, the total number tested was only 58.

The distribution of the ABO groups is very similar to a recent large series of O. Bjarnason (personal communication) who found 55.19% group O, 31.64% group A, 10.72% group B, and 2.43% group AB. The percentage figures for our series of 228 are group A 32.44, group O 53.50, group B 12.71, and group AB 1.3.

The Lewis types obtained at centres 1 and 2 are summarized in Table II. The Le(a+b-) phenotype reflects the high proportion of non-secretors, the combined frequency for the two centres being 40.6%. Also, in agreement with the secretor/non-secretor frequencies, centre 2 shows the higher percentage of the Le(a+b-) phenotype. Of the 10 Le(a-b-), 6 were group A, 3 were group O, and 1 was group B.

TABLE I
FREQUENCIES OF SECRETORS AND NON-SECRETORS

Centre	Total Tested	Secretors	Non-Secretors	Gene Frequencies	
				se	Se(1-se)
1	53	36 (67.92%)	17 (32.08%)	0.5664	0.4336
2	58	26 (44.83%)	32 (55.17%)	0.7428	0.2572
3	117	72 (61.54%)	45 (38.46%)	0.6202	0.3798
Total	228	134 (58.77%)	94 (41.23%)	0.6421	0.3579

TABLE II
LEWIS TYPES OF RED CELLS

Centre	Total Tested	Le(a+b-)	Le(a-b+)	Le(a-b-)
1	53	15 (28.3%)	31 (58.5%)	7 (13.2%)
2	58	30 (51.7%)	25 (43.1%)	3 (5.2%)
Total	111	45 (40.6%)	56 (50.4%)	10 (9.0%)

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The statement of Ari Thorgilsson in *Islendingabok* that Iceland was settled from Norway has usually been accepted beyond dispute. However, Icelanders differ from Scandinavians in a number of respects; their hair is darker and they have a higher proportion of red headed people.

It is also known that the first settlers from Norway were accompanied by Scots and Irish while some Irish monks were found to be indigenous. Blood group evidence suggests that the original Scottish and Irish elements may have been larger than hitherto assumed. For example, the group O frequency in Iceland is high and resembles that of the Scots and Irish more closely than that of Norway. Our findings of secretor/non-secretor frequencies

which, with the Scottish and Irish, are among the highest yet recorded, would seem to support this view. The findings recorded in this and the previous paper indicate that the frequencies of secretor and Lewis types for Europe may be less uniform than has been previously suspected.

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