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Status of Secretor and Non–Secretor with Respect to ABO Blood Group System in Young Population in Karachi-Pakistan

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Abstract: The current study was carried out on 550 healthy population having 250 males and 300 females. Five ml venousblood was collected following standard biosafety measures. ABO blood grouping was done by Tile method and found blood group B dominant in both sexes i.e 180 male and 120 female were found with blood group B. Moreover, 2 ml of saliva was also collected from allvolunteers. Secretor status was detected from the saliva byhaemagglutination inhibition method and found 278 female and 234 male were secretors.

Key words: Venous blood · Standard biosafety measures · Haemagglutination inhibition method · Secretors

INTRODUCTION

Blood group antigens are secreted by the secretors into various body fluids. Non-secretors secrete out very minor or none of their blood group antigens into different body fluids. Increased degree of protection against bacterial fimbria lectins may be associated with the secretion of the antigen into saliva and mucus. Secretors are more prone to hemolytic anemia, oral cancer and viral infections that have been proved by previous studies [1].

Whereas; secretors have a greater risk for diseases like tuberculosis, rheumatic fever, juvenile diabetes [2]. For future thrombotic and heart disease ABH non-secretors are reported to have a tendency toward higher factor VIII and vWFwithgreater risk. ABH non-secretors have a significantly higher rate of duodenal ulcer, recurrent urinary tract infection and persistent candida infection. These groups are also having a higher prevalence of auto-immune diseases including ankylosing spondylitis, reactive arthritis, Sjogren's syndrome, psoriatic multiple sclerosis and Grave's disease [3]. Inability to secrete the blood group substances in gastrointestinal mucus has also been associated with peptic ulcer, gastric malignancy and pernicious anemia [4]. Lack of blood group antigen in mucosal fluid in non-secretors might contribute to the colonization by H. pylori, which appears to attach itself with greater aggressiveness and cause local inflammation [5, 6]. In this study, the secretor and non –secretor status of Karachi based population was studied along with their blood groups.

MATERIALS AND METHODS

In this study, a total number of 550 volunteers was randomly selected and enrolled. In the study, age group in the range of 20 -26 of both genders with apparently healthy status was included. After taking consent, 300 females and 250 males participated in the study and comply with the research study. The enrolled volunteers were asked to join the camp, set at the Department of Microbiology, Federal Urdu University of Arts, Science and Technology for the sake of screening of blood group and indentify their secretor-non secretor status.

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Blood Grouping of the Volunteers: Blood grouping was carried out by means of Tile method by puncturing finger with sterile new lancet and later apply antisea and agglutination was observed.

Harvesting Sera of the Volunteers: With all proper aseptic precautions 5 ml of venousblood was collected from antecubital vein by disposablesyringe. Approximately 3 ml of blood was taken in adry sterile test tube at room temperature4. Serum wasseparated by centrifugation at 3000 rpm for 30 seconds.Remaining 2 ml was taken in another dry sterile testtube containing anticoagulant, EDTA.

Collection and Processing of Saliva: The volunteers' were asked to rinse the mouth thoroughly with distilled water. Approximately 2-3 ml of saliva was collected in a sterile tube. Saliva tube was kept for 5-8 minutes on a water bath to denature the salivary enzymes.

Haemagglutination Inhibition: Centrifugation was done for 5 minutes at 1000g, later supernatant was separated. Saliva was subjected to develop triple layer systemi.e saliva, then add red blood cells and add serum sample to determine Secretor-non secretor status by haemag glutination inhibition.

RESULTS AND DISCUSSION

It is a universal fact that blood is man's absolute and unchangeable identity. Although almost 400 blood grouping antigens have been reported, the ABO and Rh are recognized as clinically significant and dominant blood group antigens. This system derives its importance from the fact that A and B are strongly antigenic and anti A and anti B occur naturally in the serum of persons lacking the corresponding antigens [7]. In our study, we found that in blood group A, 80 were male and 90 were females.In blood group B, 180 were male and 120 were females. In blood group O,70 were male and 20 were female. In blood group AB 60, were male and 10 were females as mentioned in Fig. 1. The study also supports a study conducted in Bahawalpur that highlighted the highest percentage of blood group B 36.61% [8]. A study provided this fact that in the populations of the United States, Asian, Syrian Arabs and Palestinians, group O is dominant, with AB being the rarest, while in Saudi Arabia the prevalence of blood group A is higher as compared to the Pakistani population, where the blood group is more common [9]. Not only secretor and non secretor status but also certain blood group makes somebody prone towards communicable and non communicable diseases [10]. Like in Pakistani and other countries research

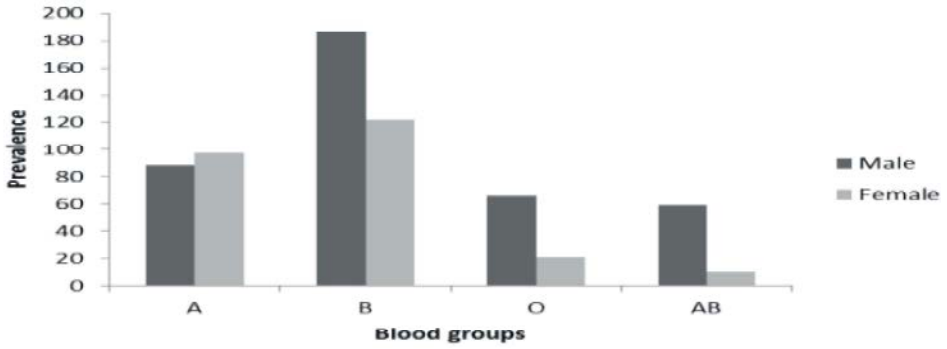

Fig. 1: Blood grouping status of the young population with a large number of B blood group domination both in male and female gender

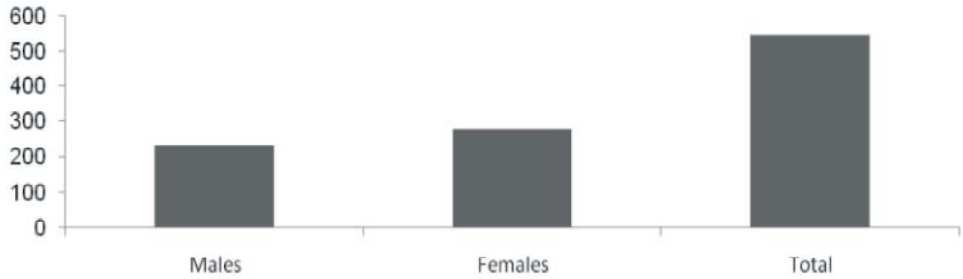

Fig. 2: Secretors and non-Secretor status among the young population tested and found 278/300 females were secretors and 234/250 males were secretor status

Table 1: Rh+ status of the population studied as in both the genders and in all ABO blood group, Rh+ status was obtained.

	Rh factor			
	Male		Female	
Blood Group	+	-	+	-
A	46	42	88	0
B	156	31	110	12
O	66	0	4	1
AB	51	8	6	4

studies, the prevalence of Coronory heart diseases in blood group A was found higher than in all otherABO blood groups [11] from England [12] and from other partsof Europe [13] or USA [14]. In one of the studies in Bangladesh population the percentage of ABO grouping werefound 33.97%, 22.44%, 35.20% and 8.39% [15]. The results indicated that secretors and non-Secretor ratio among the young population tested and found 278/300 females were secretors and 234/250 males had secretor status as indicated in Fig. 2. A number of past epidemiological studies have shown that women who are not secretors of blood group antigens have 2-3 fold higher risk of developing recurrent UTIs [16]. In Bangladeshi population study, 60% of study population was ABH secretor and 40% non-secretor. There are certain reports in 1950s and 1960s that individuals of blood group O and those who are non-secretors of their ABO blood group antigens are over-represented among patients with gastric or duodenal ulcers [17]. In short, on-secretion is associated with susceptibility to a number of infectious diseases as indicated by few research manuscripts [18, 19].

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