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Research Article

**A STUDY ON THE NORMAL LEVEL OF ANTI-THROMBIN IN  
ADULTS****Dr. Fahd Fayyaz, Dr. Tahir Iqbal, Dr. Muhammad Asif Ashiq**  
Punjab Institute of Mental Health Lahore**Abstract:**

**Objective:** The aim of this research work is to conclude the antigenic & anti-thrombin functional activation amount in the vigorous males of Pakistan.

**Methodology:** This research was conducted from January 2017 to December 2017. Fifty vigorous healthy men who were willing for this case study included in this research work. These participants separated into two different age groups. Tests carried out on those participants to know about the amounts of anti-thrombin with the help of RID (radial immune diffusion). This research work carried out at pathology department of Mayo Hospital Lahore. No participant was the victim of neither of any serious disease nor under medication. Serum samples were under consideration to conclude the antigenic & functional activity with the help of NOR-Partigen plates which were provided by Dade Behring.

**Results:** There were twenty-five participants in the younger group. The average age of the younger participants was 23.5 years. They displayed a very high concentration of anti-thrombin as 46.7 mg/dl and functional activity of one hundred and fifty-five percent. Twenty-five participants were in the older group. The average age of the older group was forty-four years. Older group displayed anti-thrombin concentration as 42.4 mg/dl and functional activity as one hundred and forty-two percent. There was not significant value of P was present between both groups.

**Conclusions:** The first group of youngsters showed a high concentration of anti-thrombin as well as functional activity. These both values decrease with the increase of age.

**Keywords:** Average, concentration, activity, vigorous, groups, anti-thrombin, pathology.

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**INTRODUCTION:**

The haemostasis meanings are broad to cover both the irregularities between anticoagulant & procoagulant aspects which give outcome in the shape of bleeding tendency or hypercoagulable condition. The term thrombophilia utilized to interpret the high propensity to have a thrombotic episode. This is outcome of testings carried out in a laboratory. It cannot be obvious in medical examination. There is a need of detection of variables that may be presentable for thrombotic propensity [1]. The decrease of anticoagulants found in the nature can be the cause of acquiring thrombophilia or a minor fault during operation, pregnancy period or the treatment of the drugs.

The complications linked with the hereditary and decrease in the amounts of anticoagulants such as anti-thrombin, PC (protein C) or PS (protein S) is the cause of low anticoagulant activity [2,3]. Some include hereditary complications causing the creation of a procoagulant condition as an outcome of FVL [Factor V leiden]. Thrombin is the most vital enzyme of the coagulation. Anti-thrombin regulates the activity of thrombin & purpose by direct inhibition of the created thrombin & by decreasing its creation with the prevention of FVa & FVIIIa [4, 5]. The production house of anti-thrombin is liver [6]. Anti-thrombin is the hinderer of serine protease [7] which performs its prevention part by not only complicating the thrombin, but also by hindering the clotting elements [8].

Heparin & proteoglycans increase the action frequency in the formation of proteinase complex [9]. The range of the concentration of anti-thrombin is from 12 mg/dl to 15 mg/dl but it has the ability to vary with gender, age or the procedure used [11, 12]. It is thought to be decrease with the increase of age especially after sixty year of life in men which is different from females [13]. Fifty to seventy percent normal antigen and PFA (percent functional activity) are very vital for the prevention of coagulation of blood [14, 15]. There are two types of the deficiencies of hereditary anti-thrombin. Type-1 consist the reduction in the quantity of anti-thrombin [16]. Type-2 consist lack in the quality of infected protein of anti-thrombin. In both of these types, reduction is less than fifty percent [15]. There are many causes for the shortage as pregnancy period, drugs addiction, serious liver complications etc [17].

**METHODOLOGY:**

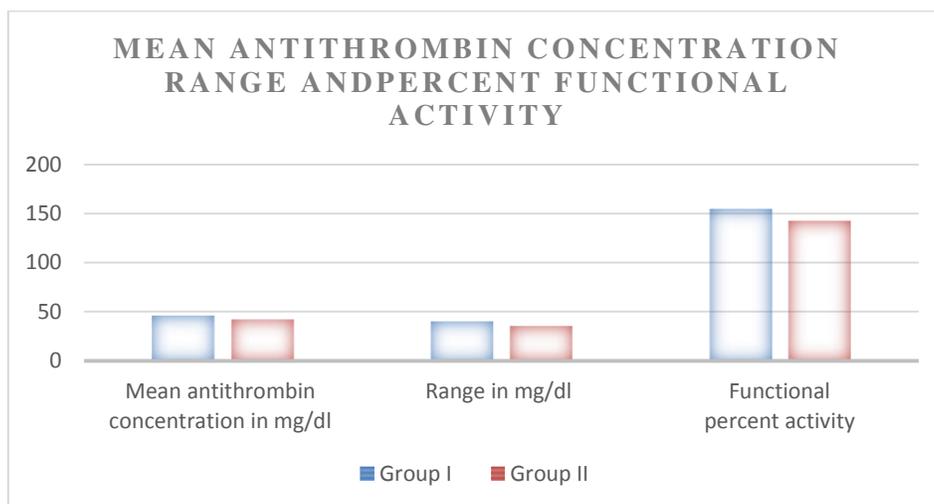
Fifty vigorous male participants separated into two groups and the test for the detection of concentration of anti-thrombin carried out & percent activity was derived with the help of RID. Twenty-five males were less than forty year of age and twenty-five males were older than forty year of age. Participants were not suffering of Subjects were neither suffering of any serious disease nor under any medication. The samples were gathered from puncture of a vein through the skin in order to withdraw blood for analysis. Blood sample of the patient took by the help of 5.0 millilitre syringe with a needle of silicon coated.

After the separation of needle, 4.5 millilitre bloods shifted to a 100 millilitres x 10 millilitres polystyrene tube which has anticoagulant of sodium citrate. Centrifugation method was used for obtaining the plasma. RID was used for the detection of anti-thrombin concentration in the sample. In this procedure, 5 $\mu$ l solution of antigen was functional in the mid of cylindrical well, two percent agarose gel which contains mono specific anti-thrombin created in the rabbits and placed on plates. The plate was placed at room temperature for forty-eight hours. There were twelve wells in each plate. 11 plates were performing the test purpose while the last one was the model of concentration. T test of the student was in use for the detection of the P value.

**RESULTS:**

Willing healthy males separated into two groups. First group consist the fifty percent participants below forty year of age. The range of their age was from twenty to thirty-nine years. Their average age was 23.5 years. Fifty percent participants of second group were greater than forty year of age. The range off their age was from forty years to seventy-two years. The average age of second group was forty-four years. Table-1 describes the pattern of outcomes that come out from participants of the study. The average concentration concluded in group-1 was 46.7 mg/ dl which was similar to the one hundred and fifty-five percent functional activities. In group-2, low average concentration than group-1 was concluded. In this age group, the average concentration was 42.4 mg/dl which is similar to the one hundred and forty-two percent functional activities. P value was more than 0.05 which was not important.

Table-I: Anti-thrombin concentration range (Mean) and percentage functional activity in the study groups.		
Parameters	Groups	
	Group I	Group II
Anti-thrombin concentration in mg / dl (Mean)	46.7	42.4
Range in mg/dl	40.7 - 50.8	36.0 - 49.0
Functional percent activity	155%	142%



### DISCUSSION:

The most primary & relevant outcome in this research work is the high average values of anti-thrombin among the vigorous healthy males of our population. In Group-1, it was 46.7 mg/dl or one hundred and fifty-five percent operational. The average age of the first group participants was 23.5 years. In Group-2, it was available as 42.4 mg/ dl or one hundred and forty-two percent operational activities. The average age of the participants of second group was forty-four years. Various research works in the same field have described different amounts for anti-thrombin with seventy-five to one hundred and twenty-five percent functional activities [10]. Some research works concluded the amounts of anti-thrombin as 30.0 mg/dl, or hundred percent operational activities in the participants are available of similar age as ours [18]. Comparing the case studies, we concluded that our young males had thirty to fifty-five percent high anti-thrombin as compared the other nations.

The outcome of this research work shows that there is

a decrease in the amounts of anti-thrombin with the increase of the age. These outcomes are very much similar to the findings of Fagerhol & Abildgaard who have described a seventeen percent decrease in the average amount of anti-thrombin between eighteen to sixty-six years in males [19]. The amounts of anti-thrombin in serum are about thirty-five percent less as compared to these amount in plasma [20]. Many other studies also reported the decrease in the amounts of anti-thrombin with the increase of the age [21]. The scarce amount of anti-thrombin initiating signs varies between twenty-nine to eighty percent of normal amounts. In this research work, the normal average amount was one hundred and fifty-five percent, this scarce amount would mean seventy-seven percent activities or less, there is a fifty percent decrease in the normal amounts.

Egeberg was the first person who reported a fifty percent decrease in the plasma amounts of anti-thrombin in hereditary cases was linked with a serious inclination to venous thrombosis [22]. There are many research works available which reported

that the less amount of the anti-thrombin has a link with medical conditions of thromboembolism. Mackie concluded an amount of twenty-five to sixty-six percent of normal in twelve participants in which seven were suffering of thrombotic disease, one among them displayed a serious grade of arterial atheroma [23]. Marciniak & his colleagues reported nine out of twenty-four participants studied from a single family having the activity of anti-thrombin from twenty-six to forty-nine percent of normal & showing with thromboembolic condition [24]. Gruenberg described fifty percent reduction in the activity which is very much medically significant [25]. This same amount discovered by Barrowcliffe and his colleagues [26]. Amounts of anti-thrombin between fifty to seventy-five percent describe a normal risk, but the amounts which are lower than fifty percent show an important risk [14].

### CONCLUSIONS:

The outcome of his research work shows that vigorous males of Pakistan have a very high concentration & functional activity performed by anti-thrombin in contrast to the other nations and these values decrease with the increase of the age.

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