ABH ANTIGEN INTO BODY FLUIDS AND SECRETION

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ABSTRACT

Forensic scientists collect the body fluid stains found at the scene of the crime and perform a variety of tests on them in order to find out the origin or where these fluids came from. One important aspect to serology is determining whether or not stain resembling blood or some other stain that bears a similar resemblance. Large percentage of population secretes their blood type ABH antigen in their body fluids and secretions like saliva and mucus secretion throughout the respiratory, digestive and urogenital tract and such individual are secretors.

KEYWORDS

Fluid
Serology
Secretors
Secretions

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INTRODUCTION

A large percentage of the populations are classed as secretors (Se) there are a smaller percentage of people who are non-secretors (se). Secretors exhibit elements of their blood's protein when they secrete other bodily fluids whilst non-secretors will not have levels of protein from their blood in their bodily fluids. It is completely independent on individual's blood group type (A, B &O). Serum and intestinal alkaline phosphatase activity is highly correlated with phenotype of secretors. Secretors have higher alkaline phosphatase activity and vice-versa. Another physiological benefit of being secretors is to enhance and promote the host-friendly microbial flora in intestinal ecosystem. And this enables to design the personalized medicines for such individuals who are secretors.

Testing the bodily fluids of secretors will reveal a result but non-secretors make it difficult for Serologists to gain any results so blood from these individuals must be tested in order to provide any level of positive result.

Again it is important to note that these procedures are used when other means of identification yield no results and although these tests may prove accurate other means of identification should be used, leaving this kind of scientific evidence to provide additional weight to any legal proceedings.

MATERIAL AND METHODS

Sample Collection

The sample used is saliva. Saliva is collected in test tubes by holding and lowering the mouth for several minutes. Sample was collected from different individuals.

Solvents and chemicals

Normal saline was used for sample preparation. Commercially available normal saline was used in order to eliminate handling error. Anti-serum (A, B & H) are used.

Preparation of saliva extract

1 ml of saliva in test tube is incubated in 100°C water bath for 10 minutes. Then subjected to centrifugation and supernatant is used as sample.

Preparation of indicator cell

The test tubes containing 1 ml normal saline (NS) marked as A, B & O. One drop of blood of respective blood groups is added in each tube followed by mixing. The contents were centrifuged at 4°C at 5000rpm for 5 minutes and supernatant is discarded. Again 1 ml of NS was added in each tube and these procedures were repeated 3 times. Finally after adding NS, it was stored at 4°C.

PROCEDURE

Inhibition Method

The anti-serum was diluted to 1:16. One drop of different anti-serum (A, B, & H) was placed in respective mark on cavity tile. One drop of sample extract were added in each cavity and rocked for few minutes followed by incubation at 2°C for 2 hours. One drop of indicator cells were added in respective cavities and incubated at 4°C for 30 minutes. Tile was rocked for 5 minutes and examined for agglutination with nake eye and under microscope.The results are interpreted as given in Table 1.

Absorption Elution Method

Three tubes (labeled as A, B & H) were taken containing sample. The sample was dipped in minimum amount of respective antibodies and incubated at 4°C for at least 18 hours. After washing with chilled saline three times; indicator cells were added in respective tubes followed by incubation in oven at 56°C for 30 minutes. Then, agglutination was examined under microscope and interpreted as given in Table 2.

Table 1:- Interpretation of result for Inhibition Method

Agglutination			Result	
A	B	H	**Blood group**	**Secretor status**
●	●	●	Unknown	Non-secretor
○	●	○	A+	Secretor
●	○	○	B+	Secretor
●	●	○	O+	Secretor
○	○	○	AB+	Secretor

'●' = Agglutination '○' = No agglutination

Note:- No agglutination in 'H' column means Rh antigen is present

Table 2:- Interpretation of result for Elution Method

Agglutination	Result

A	B	H	Blood group	Secretor status
●	●	●	AB+	Secretor
○	●	●	B+	Secretor
●	○	●	A+	Secretor
○	○	●	O+	Secretor
○	○	○	Unknown	Non-Secretor

'●' = Agglutination '○' = No agglutination
Note:- Agglutination in 'H' column means Rh antigen is present

RESULT AND DISCUSSION

Table 4:- Secretor Status and Blood Group for Inhibition Method

Individual Code	Agglutination			Result	
	A	B	H	Blood group	Status
1	●	○	○	B+	S
3	●	●	○	O+	S
3	●	●	●	Unknown	NS
4	○	○	○	AB+	S
5	●	○	○	B+	S
6	○	●	○	A+	S
7	●	○	○	B+	S
8	●	●	○	O+	S
9	●	○	○	B+	S
10	●	○	○	B+	S
11	○	●	○	A+	S

'●' = Agglutination, '○' = No agglutination, S= Secretor, NS= Non-Secretor

Table 4:- Secretor Status And Blood Group For Elution Method

Individual Code	Agglutination			Result	
	A	B	H	Blood Group	Status
1	●	●	●	B+	S
3	○	○	●	O+	S
3	○	○	○	Unknown	NS
4	○	○	○	Unknown	NS
5	○	●	●	B+	S
6	●	○	●	A+	S
7	○	●	●	B+	S
8	○	○	●	O+	S

9	○	●	●	B+	S
10	○	●	●	B+	S
11	●	○	●	A+	S
'●' = Agglutination, '○' = No agglutination, S= Secretor, NS= Non-Secretor					

The samples were collected from 11 individuals in same environmental conditions and to prove that results are correct control blood sample are used to confirm the blood group of the individual. This suggests that the test done from the saliva gives correct result. However, In case of individual code 4, result was insignificant for the elution method. Further, it can be said that blood group antigens are released in secretors and can be used for detecting type of blood group of that individual. The result also suggests that the majority of the human are secretors.

The future aspects are the development of the personalized medicines on the basis of the microbial flora compatible with the blood type antigen. It will also lead to the development of live vaccine that is effective with that blood type antigen.

Acknowledgements

The author would like to express immense gratitude to Mr U K Sinha (Director, FSL, Patna), Mr. Ajay Kr Paswan and staff members of Forensic Science Laboratory, Govt. of Bihar, Patna for his constant support and motivation that has encouraged the author to come up with this work.

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