

Bodily fluids in forensic science



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Introduction

At crime scene criminal investigator tries to identify the crime and he looks for evidence to support the crime. They use to be very careful to collect evidence because it is not always possible to prove crime after watching crime scene so they can analyse this evidences in laboratories after crime (Saferstein, 2007, P-38). This essay will first demonstrate the brief information of body fluids then it will describe basic information of saliva but few notes on faecal material. Finely we will discuss some important different method to identify saliva (appendix 1. 1).

The most familiar body fluids come across in forensic laboratories are blood, semen and saliva and further more are vaginal fluids, urine and sweat. All of this can be include as a source of DNA. The functions of body fluids are transport (blood), defence and lubrication (vaginal fluid), digestion (saliva) and excretion (sweat and urine). Body fluids are diverse composition associated to their role and site of secretion. Diverse composition of body fluids gives the essential current identification test. There is a table 1. 1 shows diverse composition of body fluids. Saliva and vaginal fluids are examining particular in whether a rape or sexual assault has been committed or not? (Vincini, 2010, p-29) within this study you can see some information about saliva and faecal.

Saliva

A daily secretion of Human saliva is 1. 0 to 1. 5 litres. See appendix (print out page 135) (Li, 2008, page-137) Saliva includes more than 99% water; secretion of saliva secreted 90% from major and 10% minor glands.

Physiology of saliva see appendix (print out page 6, 7, 8) (Vincini, 2010, p-32) this Endocrine glands produce saliva and semen; it can lead as a forensic exhibit. Saliva comes in mouth by ducts frequently and it is slightly alkaline PH. In mouth it works like grease for membrane surface and also helps to chew up and gulp down the food in mouth. Saliva contains some enzymes and salts. On the behalf of amylase enzymes activity and enzymes linked immunosorbent assay (ELISA) we can get best result for presents of saliva stains. Saliva is significant key for forensic paupers because saliva stains may be at bite spots and also illegal drugs identification can be done by saliva, in additions it can be use as a source of DNA. (R., & Wolbert, 2008, p-72)

Discussions

The aim of this study is to examine the saliva and faecal present on victim cloths which can lead to give more information of criminal and victim. During examine exhibit we come to know that physical appearance of victim by the measurement of given clothe. Faecal stain visible on cloth but it was not easy to differentiate between saliva and blood stain, it confirmed by Phadebas paper test. Inside the cloth there was a hair which can give more evidence for crime. Time measurements are recorded for colour changes in saliva test which can be seen in hand written examine documents.

Saliva and semen gives fluorescence in UV lights. In the presence of UV lights saliva take in some parts of UV lights and re- produce longer wavelength visible lights. All fluorescent substance can give visibility with UV lights which can be food on clothes, urine and many more (R., & Wolbert, 2008, p-72). In presents of UV light saliva appears with blue or white stains.

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This is only presumptive test for saliva. α -amylase activity is most common to examine saliva stain and The Phadebas test is very well known identification method in forensic laboratories which is first time introduced in 1974 by Wiloot. Appendix (print out page 16-17, PDF—1, p-41). Phadebas paper has chains of polymers starch it known as Bio-Degradable Starch Microspheres (DSMs). Enzymatically degradations of DSMs done by α -amylase, in existence of saliva and it give blue colour dye but more amount of water concretion can affect more to locate saliva stains; according to Pang and Cheung 2008, positive result are 1: 100 dilution only and Myers and Adkins 2008; said 1: 200 (Appendix). SALIgAE test also based on salivary α -amylase activity and result come as a colour change in sample. This test gives strong signal at 1: 10000 dilutions and positive signal up to 1: 25000 dilutions. RSID-saliva is new market kit, it is able to give good positive at 0.1 μ it can also give clear result between human and animal saliva because this test use mouse monoclonal antibodies which is specific for human saliva to give presence of salivary α -amylase. According to Juusola and Ballantyne (2005), blood and sperm cell can be conforming by test but it is very difficult to differentiate between saliva and vaginal secretions. According to James and Nordby (2003) human body have two α -amylase isoforms; salivary amylase (AMY1) and pancreas amylase (AMY2), both of this encoded in a genes on chromosome number 1. Salivary amylase (AMY1) can also found due to breast milk and sweat. In addition pancreas amylase (AMY2) can give positive result from vaginal fluids and semen. Presumptive test of saliva, α -amylase is done in most of forensic laboratory but for conformity test of saliva protein identification can be done using statherin and histatin protein marker with mRNA technique. Brown et al. (1984) said; oral streptococci can

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be seen at bite marks and DNA from saliva can lead for DNA profiling.

Recently Nakanishi et al. (2009) said; bacteria can be use as a marker of saliva, their research work done on streptococci. *S. salivarius* and *S. mutans* give 100% and 90% conformation of saliva using PCR (polymerase chain reaction) which can differentiate between saliva and vaginal secretions(Vincini, 2010, p-22).

Conclusion

The aim of this essay was to evaluate role of saliva analysis to give information of the victim and criminal. To support this question first some basic of forensic science and criminal investigations was described. In addition we looked at body fluids then detail information of saliva. There was also more about Presumptive and conformity test for saliva but lack of information about faecal. Advantages of saliva test gives quick and most passable criminal and victim identification, it has big contribution to further development of criminal investigation because their aspects are endless.