

ENZYME ACTIVITY IN STORED SUPERNATANTS FROM BIOLOGICAL SAMPLES

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The ability to determine the potential source of a biological stain using enzymatic testing of the supernatant can be useful in forensic cases. Enzymatic tests for saliva and semen have been used for many years and are now common place in forensic biology laboratories around the world. Several studies have been done on stains that have been stored and tested over time to determine whether the activity of the enzyme changes in the stain, however, the test is always carried out immediately after the supernatant is prepared. This work investigates the reliability and consistency of the results of these tests carried out on supernatants that have been stored for varying lengths of time. The reason that supernatants may be kept and not tested immediately is that it is not practical to test every sample for all enzymatic tests. The test may not be relevant due to characteristics of the sample or circumstances of the case known at the time of analysis. However, later in time if new or different details are revealed enzymatic testing may be requested after completion of all the laboratory work.

This study aimed to look at the results of enzymatic tests for the presence of saliva and semen in supernatants (from saliva, semen and mixed stains) that had been stored in the fridge (4°C) and in the freezer (-20°C).

Swabs were stained with saliva, semen or a mixture of saliva and semen and dried. They were sampled and soaked in extraction buffer and the supernatants collected. The study was done over a two month period with the supernatants stored in the fridge and in the freezer and tested at specified time intervals throughout. Phadebas[®] tablets were used to test for α -amylase in saliva and the acid phosphatase (ACP) test and ABACard[®] p30 test were used to test for acid phosphatase and prostate specific antigen respectively in semen. This poster summarizes the results of this study.

This information is useful especially in laboratories where it is common practice to collect and store the supernatant from stains during the DNA extraction process. This study demonstrates that if a supernatant is not tested immediately the result of a test may continue to provide reliable results. It is advisable to store supernatants in a freezer rather than a fridge.