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SERATEC® Amylase Paper

REF: AMY-P, AMY-PS

Intended use

The SERATEC® Amylase Paper is a mapping tool for the fast preliminary detection of saliva on samples of forensic evidence.

Product principle

The enzyme α-amylase is found at very high levels in human saliva. Its ability to digest starch is used as an indicator for the presence of saliva. The Amylase Paper is a filter paper impregnated with starch and detects amylase via the starch-iodine reaction. In the presence of amylase, starch is digested, so that a starch-iodine complex cannot be formed. Thus, areas of the Amylase Paper that have been in contact with amylase are differently colored than those without amylase.[1,2]

Materials provided

- 25 sealed A4 Amylase Paper sheets
- 50 mL glass bottle with the Iodine Stock Solution (AMY-PS only)
- 30 mL bottle with spray cap for the Iodine Working Solution (AMY-PS only)
- user instruction leaflet

Storage and stability

The paper sheets and the iodine solution are stable up to the batch expiration dates as stated on the product label. Both should be stored dry and dark at room temperature or refrigerated (2-30°C resp. 38-86°F). The paper must remain in the sealed pouch until use.

Precautions

Samples of forensic evidence and all materials coming in contact with them should be handled and disposed of as if capable of transmitting infection. Avoid contact with skin by wearing gloves and proper laboratory attire. The product itself and all materials coming in contact with forensic samples should be autoclaved before disposal.

- Do not use the product after expiration date.
- Do not use the product if it has been damaged.
- The test uses iodine and Potassium iodide. Please attend the GHS hazard statements.
- Do not open pouches until ready to perform the assay.
- Do not freeze any components of this product.

Sensitivity

According to internal validation studies, the detection limit of the Amylase Paper is 125 mIU/mL of amylase (based on a dilution series of alpha-amylase).

Specificity

The Amylase Paper is a fast presumptive mapping test and not specific to human salivary amylase. It reacts positively with all amylases which have the ability to digest starch. Bodily fluids such as sweat, seminal fluid, vaginal fluid and blood do not react with the Amylase Paper. Faecal samples could react positively due to the presence of pancreatic amylase.

Preparation of the stock solution

50 mL of the Stock Solution is included in AMY-PS. Should the included volume be used up, please prepare a new solution as follows:

1. Dissolve 0.5 g Potassium Iodide in 50 mL of distilled water.
2. Add 0.25 g iodine and stir the solution until the iodine is dissolved.
3. Pour the solution into a brown glass bottle and label it.

Preparation of the working solution

1. Add 2 mL of the stock solution to 28 mL of di. water and stir the solution until it is mixed consistently.
2. Pour the solution into the 30 mL spray bottle or use it directly for spreading as described in the Test Procedure.

About 30 mL are sufficient to cover one A4 sheet. Smaller paper cuttings can also be prepared, if necessary. In this case the use of 1 mL of the Working Solution per 10 cm^2 (1.55 in^2) is suggested.

Reference controls

Positive: swab of saliva
Negative: swab of distilled water

Test procedure

1. Allow all product components to warm up to room temperature before usage.
2. Moisten the Amylase Paper with distilled water.
3. Place the test object on a flat surface. The object can, for example, be stretched out over a piece of a glass board, covered in a plastic wrap.
4. Place the prepared piece of Amylase Paper over the area to be tested.
5. Press down on the paper with gloved hands for 10-15 seconds.
6. Remove the paper from the object and place it on a smooth surface, e.g. a plastic tray. Avoid air bubbles underneath the paper.
7. Put the positive control (saliva) and the negative control (distilled water) on the paper with cotton-tipped swabs. The positive control can also be used as an orientation mark. Put the swab sample by pressing on the paper for approximately 10-15 seconds.
8. Incubate the Amylase Paper for 10 minutes at room temperature **before** applying the iodine solution.
9. Pour or spray the Iodine Working Solution over the Amylase Paper.

Remark: depending on the material type, the test object can also be pressed on the moistened Amylase Paper, and not vice versa, for a better amylase transfer (steps 3-5).

Interpretation of results

Negative samples show **no white area,** whereas **positive** samples show **a white area on the Amylase Paper usually surrounded by a brownish-blue background.**

Negative result (no amylase in the sample or amylase concentration below detection limit)
No white area is visible on the paper, except for the positive control.

Positive result (amylase detected)
A creamy-white area usually surrounded by a blue background indicates a presumptive positive result for saliva as Amylase has been detected.
Remark: A positive result may show spots of different shapes and shades. Air bubbles underneath the Amylase Paper may cause brighter areas in contrast to the surrounding.

Invalid result
Either positive or negative control or both do not appear as expected. Please make sure that the Iodine Working Solution was spread evenly and covers the entire area of the Amylase Paper sheet. If necessary, prepare new positive and negative control swabs and repeat the mapping test using a new Amylase Paper sheet.

Recommendations

Results of the amylase mapping can be confirmed by a human specific protein-based SERATEC® AmylaseTest. Use a 1cm^2 cutting of the positively reacted area of the test object for extraction. The extract is also fully compatible with the subsequent STR typing.[3,4]

References

(1) Gaensslen, R.E. 1983. Sourcebook in Forensic Serology, Immunology and Biochemistry, National Institute of Justice, 183-189.
(2) Wurster, J.W. and Laux, D.L. 1990. A rapid amylase mapping procedure. MAFS Newsletter 19, 48-49.
(3) SERATEC® AmylaseTest: http://www.seratec.com/amylase-test.
(4) Barbaro A. et al. 2015. Evaluation Study about the SERATEC® Rapid Tests, Forensic Science International: Genetics Supplement Series 5, e63–e64.

Symbols

Expiry date
Storage temperature
Lot number