A NOVEL LATERAL FLOW STRIP TEST FOR RAPID IDENTIFICATION OF HUMAN SALIVA (RAPID STAIN IDENTIFICATION-SALIVA)

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In the field of forensic sciences, identification of human saliva is important for both legal and investigative purposes. The identification of saliva on items such as envelopes, cans, cups, bottles, and fabric may aid investigators in reconstructing what occurred during a crime. In addition, saliva detection can help determine which items of evidence should be processed for DNA-STR testing. Current methods used to detect human saliva assay for the enzymatic activity of α-amylase, an enzyme found in saliva that aids in the digestion of starches. These methods have significant disadvantages including lack of specificity, lack of sensitivity, and lack of integration into current DNA-based protocols. Here, the developmental validation of a new saliva identification test, **R**apid **S**tain **Id**entification-Saliva (RSID-Saliva), is described.

RSID-Saliva utilizes two anti-salivary α-amylase monoclonal antibodies in a lateral flow immunochromatographic strip test format to detect the presence of salivary amylase, rather than the activity of the enzyme. We present experimental evidence demonstrating that this test is accurate, reproducible, easy to use, and highly specific for human saliva. In addition, we show that the test can detect saliva from envelopes, glass bottles, cans, swabs, and plastic lids before they are processed for DNA-STR analysis. Importantly, the test sensitivity has been adjusted such that if saliva is detected, there should be sufficient biological material for generating an STR profile. Also, we describe studies on the sensitivity, body fluid specificity, species specificity, and stability of RSID-Saliva. In conclusion, we suggest that RSID-Saliva will be effective and useful for the detection of human saliva on forensic exhibits, will reduce cost and labor for forensic labs, and will become an essential tool to aid forensic scientists in crime scene investigations.