EFFICACY OF RECOVERY AND ROOM-TEMPERATURE STORAGE OF DNA FROM ASSAULT RIFLE MAGAZINES

Esiri Tasker, Sheree Hughes-Stamm, Bobby LaRue, Department of Forensic Science, Sam Houston State University

Violent crimes committed with modern automatic firearms have a number of residual items that are likely to be discarded at crime scenes. During preparation, the perpetrators of these crimes have had intimate contact with these components during magazine loading. This contact provides an opportunity to collect DNA samples from these discarded items that are directly linked to the perpetrators. Forensic DNA analysis by STR genotyping of individuals is a very powerful tool to assist law enforcement officers and prosecutors trying to properly identify and successfully convict criminal offenders. The combined DNA index system (CODIS) database allows for nationwide STR profile searches against samples from crime scenes with no known suspect. These benefits and successes have caused a near exponential increase in the use of forensic DNA testing. This increase in demand has overwhelmed crime labs, creating large backlogs of samples for DNA testing. Storage of these backlogged samples can create yet another logistical hurdle for resource strapped laboratories. In this study we chose to compare the efficacy of three collection devices for collecting touch DNA samples from decontaminated polymer and aluminum assault rifle magazines that were then loaded by test subject: traditional cotton swabs (Puritan), CEP cotton paper swabs (Fitzco), and nylon flocked swabs (Copan). We also determined the efficacy of a novel, room-temperature, storage device, the SwabSaver® (FastForward Forensic, Madison, WI), to preserve biological samples for later testing over other room-temperature storage methods. To determine the efficacy of swab type and preservation method DNA quality was ascertained via both DNA quantification (PowerQuant®, Promega, Madison, WI) and STR genotyping performance (Powerplex®Fusion, Promega).