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A Comparative Study of Gunshot Residue Obtained from M16 and AK47 Rifles for Forensic Science.

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The qualitative and quantitative study of gunshot residue (GSR) obtained from M16 and AK47 rifles are reported. The GSR samples were collected from various different sources of the shooter (hand, cloth, and helmet), elapsed time, and number of shooting. The scanning electron microscope with electron dispersive X-ray spectrometry (SEM/EDS) showed that the various shapes and sizes of the GSR samples as well as unique particles were observed. The unique particles have various elemental compositions such as Pb, Ba, Sb, Ti, Zn, and Sr. According to the inductively coupled plasma-Mass spectroscopy (ICP-MS) investigation, it is found that the heavy metal concentration increases as the number of shooting. The heavy metal concentrations depend on which parts of source are studied. The results showed that the heavy metal concentration and GSR particles decrease when the elapsed time increases. In this study shows that, SEM/EDS can identify the unique particles and their elemental composition, while ICP-MS can only measure the exact concentration of heavy metals in GSR.

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