Pharm Anal Acta 2018, Volume 9
DOI: 10.4172/2153-2435-C3-040

Ta-Gsr-trace analysis of gunshot residue in Pakistan using locally manufactured ammunition on different fabrics

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Gunshot residue (GSR) is also known as cartridge discharge residue (CDR) or firearms discharge residues are the particles produced during the discharge of a firearm. The demonstration of GSR in firearm injuries is of prime importance in forensic science. It creates an understanding of the nature of the injury and the direction of the shot which might be clearly demonstrated in the courtroom. GSR has the main role in criminalistics department. The objective of the present study was to detect the chemical components present in gunshot residues, the elemental and microanalysis of gunshot residues by using scanning electron microscopy with energy dispersive X-ray spectroscopy. The composition of gunshot residues was analyzed by using three chemical tests; Modified Griess test, sodium rhodizonate test and diphenylamine test. The presence of gunshot residues evaluates on the basis of different color intensities obtained by different chemical procedures. The more/less GSR detected the more/less color intensity was observed. Modified Griess test and Diphenylamine test give orange and blue color to indicate the presence of nitrites/nitrates whereas sodium rhodizonate test gives pink color for the detection of lead residues. Scanning electron microscopy gives the exclusive geometrical images of different GSR particles with high magnification power and the peaks of GSR components can also be plotted with the help of EDX. The persistence of GSR residues on different fabrics cannot depend upon on the variable firing distances rather it depends on the texture of the fabrics. As the distance was increased the GSR intensity was decreased, which was observed by this research. This work will help to reconstruct the shooting scene to estimate muzzle-to-target distance up to 7feet.

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