



H34 Is the Survey of Forensic Botany Useful? The Application and Limits of Forensic Case Analysis

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Learning Overview: After attending this presentation, attendees will understand the role of forensic botany in crime scene investigations.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by demonstrating the influence of forensic botany in the evaluation of manner of death, in analyzing the dynamics of death, and in clarifying the primary crime scene.

In recent years, botany has become an extremely important tool for forensic analysis. The study of plants and their alterations as a result of the dynamics of criminal events is able to provide critical interpretative information during the judicial inspection of the crime scene and may inform the determination of manner of death. In this study, each reported case involved a detailed scene analysis performed at least twice. In each judicial inspection, all the botanical elements were analyzed and cataloged. In addition, botanical analyses were carried out on the clothing and/or on the victims' bodies. In cases in which multiple botanical elements were found, a method of taxonomic comparison was applied between the environmental elements with the vegetative elements found on the corpse. Each element was analyzed macroscopically and compared with photographic surveys. This presentation reports six forensic cases in which forensic botany analysis was employed. The purpose of this study is to better understand and characterize the nature of the forensic cases in which botanic studies prove most useful.

In the first case, the suspected suicide of a girl was analyzed, due to a fall from a height. The dynamics of the fall were not initially clear. On the girl's hair and clothing, investigators found botanical elements that were compared to plant elements of a garden hedge. This analysis allowed for the reconstruction of the impact point and the subsequent projection during the fall, thus clarifying the mode of death.

The second case involved a man's sharp force slash murder. During the inspection and at the autopsy, botanical elements were found on the neck in the region of the sharp force injuries, together with other elements on the back that were completely crushed and mixed with soil residues overlying a large lumbosacral ecchymosis. These botanical data, together with the autopsy evidence, suggested that the victim was dragged after the murder and clarified the position of the body at a different point from the site of the murder.

The third case concerns a boy found dead due to a suspected pedestrian versus motor vehicle collision, albeit at a considerable distance from the accident site. Neither the dynamics of the collision nor the driver's statements regarding the impact were clear. The presence of botanical elements on the corpse suggested the actual point of impact of the corpse following the projection due to the impact with the car.

The fourth case concerns a demented elderly woman who was found dead following a mid-height fall. At the autopsy, there were small botanical elements that suggested the path taken by the woman before the fall, also clarifying the mode of death.

The fifth case concerns a boy's fall from a height. The discovery of specific botanical elements overlying the soles of the shoes and on clothing suggested the boy's fall from an area made up of bushes at a height of about 20 meters.

The sixth case concerns the death of a man with electrical and other traumatic injuries who was found in an apartment. The analysis of botanical elements in the hair directed the investigators to search for another crime scene, clarifying the dynamics of death that occurred accidentally during the theft of copper from high voltage pylons.

In total, these cases show that forensic botany can be an important aid in investigations for: (1) clarifying the method of death; (2) analyzing the points of loss of balance and impact in falls; (3) clarifying the dynamics of suicides or accidental traumatic events, such as pedestrian versus motor vehicle accidents; (4) identifying the primary crime scene with respect to a secondary one; (5) unveiling false crime scenes; and (6) revealing the dynamics of concealment of the corpse in cases of homicide or displacement of the body.

Certainly, this investigation is limited by the wide geographical areas, by the state of integrity of the analyzed elements, and by the timing with which the investigations are carried out. To date, the standard analytical method is the macroscopic and microscopic comparison of the elements in their taxonomic characteristics.

Forensic Sciences, Forensic Botany, Autopsy