

O2 FC

UPDATING PROCEDURES IN THANATOchemistry: A MULTIWAY ANALYTICAL PLATFORM FOR POST MORTEM INTERVAL (PMI) ESTIMATION IN VITREOUS HUMOR

R. Risoluti¹, S. Canepari¹, P. Frati², V. Fineschi², S. Materazzi¹

¹*Department of Chemistry, "Sapienza" University of Rome, Rome Italy*

²*Department of Anatomical, Histological, Forensic Medicine and Orthopaedic Sciences, "Sapienza", University of Rome, Rome, Italy*

A novel multiway approach is proposed based on spectroscopy and thermogravimetry associated to chemometrics, able to provide a multiparametric characterization of vitreous humor as a function of the time since death. Postmortem examination of the body was performed on hospital deaths occurred in casualty by medico-legal autopsy in order to estimate the precise time since death. The ICP-OES analysis was used to determine micro and macro elements in vitreous specimen that were found to be diagnostic in predicting the Post Mortem Interval (PMI). The thermogravimetric outcomes revealed that the percentage of bulk and bound water may be correlated to the spectroscopic analysis and chemometric tools were used to compare results and to develop a model of prediction of PMI. A significant role of P, S and Mg in addition to the potassium concentration may be observed in determining the death interval. In addition, the multiway analytical platform permitted to increase in the accuracy of PMI estimation with respect to conventional procedures and to extend the investigation of PMI to 15 days [1].

References

[1] Risoluti R., Canepari S., Frati P., Fineschi V., Materazzi S, "2n analytical platform" to update procedures in thanatochemistry: estimation of Post Mortem Interval in vitreous humor , Analytical Chemistry 2019, doi 10.1021/acs.analchem.9b01443