DIFFEREX™ SYSTEM ON MAXWELL® 16: A RAPID DIFFERENTIAL EXTRACTION TO SOLVE A CASE OF SEXUAL ABUSE

N. Staiti, D. Denari, S. Bozzi and G. Lago

Sexual abuses certainly represent one of the most relevant crimes that a forensic investigator can deal with in his activity. The evidences in these cases are usually biological samples with a mixed matrix: seminal fluid and epithelial or blood cells. Differential extraction is a powerful tool to separate the two components: in this way the power of discrimination for the male fraction is higher because we can analyze the autosomal STR and not only the Y-STR. In our activity, we normally investigate several cases of sexual abuses occurring in the North of Italy (roughly 250/300 per year), it follows that it's fundamental for us to reduce the time of the analysis and to dispose of an efficient tool to identify the male contribute for the following comparison with the genetic profile of the principal suspects.

The yield of this kind of analysis is a key factor when the amount of samples found on the crime scene is low. In our case, we performed a differential extraction starting from different matrices: semen-blood, semen-saliva and vaginal swabs. In order to evaluate the power of separation of male fraction from the other tissues – even in very low quantities of semen fluid - we performed a series of mixed samples (semen-saliva) in which the female fraction was the same (20 µl) while the male fraction (semen) was present in different concentrations. We mixed 20 µl of female saliva with 5 µl of semen fluid of known DNA concentration (~10 ng/µl) and we varied the concentration of the sperma by reaching a final dilution of 250 times.