A109 Comparative Analysis of Condom Residues Pre- and Post- Coitus by Liquid Chromatography - Mass Spectrometry (LC - MS)

Lesley Ann M. Huggins, Peter J. Diaczuk, BS*, and Gloria Proni, PhD*, John Jay College of Criminal Justice, 445 West 59th Street, Science Department, New York, NY, 10019*

After attending this presentation, attendees will know the chemicals present in a pre- and post- coitus vaginal swab in the presence of condoms of different kinds, and lubricants and polymers associated with the presence of different condoms and will have a clear picture of LC - MS in forensic analysis.

This presentation will impact the forensic science community by providing research data of components of different brand condoms.

In the last several years the number of sexual assaults in which the perpetrator used a condom has dramatically increased. In sexual assault cases, lubricants and polymer recovered from the crime scene may provide useful information for the investigation, particularly when DNA evidences are not available. Individuals, generally, use condoms to be protected by sexually transmitted diseases and to prevent identification from the deposited semen. Several techniques have been used in the past to analyze traces left by condoms: raman spectroscopy[1], gas chromatography–mass spectrometry,[2,] infrared spectroscopy[3], nuclear magnetic resonance[4,] and capillary electrophoresis[5]. In this research liquid chromatography– mass spectrometry (LC-MS) have been used to determine differences between commercially available condoms. The study is organized in two parts. Initially, condoms sold in the United States were solvent - extracted and analyzed by liquid chromatography– mass spectrometry (LC-MS) in order to obtain pre-coital data, which may help to differentiate the condoms. Some of the condoms' brand did contain a spermicide in the lubricant formulation. In the second part of the study the traces obtained from a vaginal swab in post-coital conditions were also analyzed by means of the same technique: the same condom brands have been use in the two parts of the study. Volunteers have been recruited in order to obtain the vaginal swabs after intercourse. The overall goal of the project was to individualize the condoms and consequently collect useful information that could be used in sexual assault cases.

References:

1 J. Wolfe, B.S. and D. L. Exline, M.S.F.S., J. Forensic Sci,. 2003, vol. 48, No. 5 pp. 1 - 8

2 P. Maynard, K. Allwell, C. Roux, M. Dawson, D. Royds, Forensic. Sci. Int., 2001, Vol. 124, pp. 140-156

3 G. P. Campbell, M. Sc. (Hons) and A. L. Gordon, M. Sc. (Hons), J. Forensic Sci, 2007, vol. 52, no. 3, pp 630 – 642

4 G.S.H. Lee, Ph.D., K. M. Brinch. BSc, K. Kannangara, Ph.D., M. Dawson, Ph.D., M. A. Wilson, D.Sc., J. Forensic Sci,. 2001, vol. 46, No. 4 pp. 808 - 821

5 F. Burger, M. Dawson, C. Roux, P. Maynard, P. Doble, P. Kirkbride, Talanta, 2005, vol. 67, pp 368-376

Condom Lubricants and Polymers, LC-MS, Vaginal Swabs

 ** Presenting Author*