THE USE OF HUMAN LICE IN FORENSIC ENTOMOLOGY

Kosta Y. Mumcuoglu[1], N. Gallili[2], A. Reshef[2], P. Brauner[2] & H. Grant[3]
[1]*Department of Parasitology, Hebrew University-Hadassah Medical School, Jerusalem,*
[2]*Forensic Biology Laboratory, Division of Identification & Forensic Science, Israel Police and*
[3]*Fibers & Polymers Laboratory, Division of Identification & Forensic Science, Israel Police,*
Jerusalem, Israel

Identification of individual hosts of hematophagous arthropods via blood meal analyses is a continuing pursuit in medical and veterinary entomology. In order to examine the possibility of using lice as an evidence of physical contact between two individuals, a laboratory colony of human body lice maintained on rabbits was used. Female lice starved for 48 hrs were placed on the arm of a volunteer and fed for 30 min and frozen at intervals of 2-14 hrs. Roots of plucked head hair were the source of reference DNA of the volunteer. DNA was extracted from the swabs using the phenol/chloroform and ethanol precipitation procedure and PCR amplified using the Promega GenePrintTM STR System, SilverSTRtm III Triplex. The DNA profile of the volunteer was identifiable in the pooled meals of two body lice up to 17 hrs after feeding.

Female body lice, starved for 48 hrs were placed on the skin of the first volunteer for 15 min and then transferred to a second volunteer for the same period of time. Up to 3 hrs after feeding the mixed DNA profiles of two hosts was detectable in the pooled blood meals of three lice.

Head lice and individual hairs were removed from the head of infested children. DNA profiles were obtained by pooling the blood meals of three adult and three nymphal stages of lice.

Although the DNA of an individual could be identified in a relatively short period of time in the blood meal of louse and despite the fact that several lice are necessary to receive enough material for the diagnosis, the present study clearly shows that in criminal cases, in which there has been close contact between assailant and victim, i.e., rape and murder, louse blood meals may prove to be the critical link.