

EXPERIMENTAL EVIDENCE ON THE TRANSMISSION AND CONTROL OF HEAD LICE, *PEDICULUS CAPITIS*.

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Several studies on the transmission and control of the head louse, *Pediculus capitis*, were conducted to determine transmission mechanisms in various environments and to investigate transmission prevention issues.

Experimental in vitro evidence indicated that a louse predominantly transfers onto another hair if the hair passes to the side and from tail-to-head in relation to the louse. This is due to the manner in which the fore claws are positioned. No lice transferred onto a hair passing above them and very few transferred onto a hair passing below. Two experimental transmission trials, involving head-to-head contact for 30 minutes from naturally infected child to adult, showed transmission of 1 of 9 nymphs on one occasion and no transmission of 29 lice on another occasion.

Anecdotal evidence suggests that swimming pools and other swimming areas may provide a hot bed for lice transmission. In vitro trials on lice survival in water containing swimming pool chemicals demonstrated that lice could survive in highly chlorinated, fresh and salt-water pools supporting the idea that pools would be excellent transmission sites. Transmission experiments in a swimming pool, however, were unable to achieve cross-infection with zero transmission and full lice recovery from a single infested host on 3 occasions.

The purported effectiveness of isopropyl alcohol as a control agent was investigated in vitro. After 10 minutes in full strength solution, lice were initially immobile, but all lice recuperated after 8 minutes to feed on a host and no lice died within the next 4 hours. The repellent effects of essential oils were then explored in vitro. Lavender was shown to possess no repellent qualities and thyme was minimally repellent only in the first 20 seconds after application.

These studies indicated that head-to-head transmission is not as frequent as may have been thought and that certain circumstances must prevail for successful transmission. The swimming pool transmission studies suggested that this medium was a less significant risk for transmission of head lice. Isopropyl alcohol was found to be ineffective and repellent studies indicated that any success related to the essential oils tested was probably due not to repellency, but to mechanics in that lice had great difficulty in gripping oiled hair.