

LABORATORY BIOASSAY FOR EVALUATING BIOLOGICAL EFFECTS OF PEDICULICIDES

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Head lice infestation is a common problem in Argentina. Recent studies made on 5635 children from Buenos Aires, showed 77% infestation (at least 1 insect) in 5- 12 years old children. Most of infested children (60%) were affected with less than 10 lice, 34% with 11- 50 lice, 4% with 51- 100 lice and the lowest proportion were infested with more than 100 lice. The high prevalence of head lice found in the examined children was contrasting with the important market of pediculicide in Argentina, reaching to 12 million dollars in 1997.

Laboratory evaluation of head lice toxicity of commercial and experimental rinsed creams and lotions was made on adults and third instar nymphs by immersion method. Treated insects were kept in the dark at 18°C and 70- 80% RH for 18 h after treatment, environmental conditions that produced the longest survival of control insects in the laboratory. No difference in the activity of permethrin rinsed creams or d-phenothrin capillary lotion was found when insecticide concentration was increased or another pyrethroid was included. Otherwise the modification of pediculicide formulation by adding pharماسolve in the rinsed cream or aliphatic alcohol in the lotion, increased the pediculicidal activity attributable to some effect on the insect cuticle.

Ovicide efficacy of commercial and experimental capillary lotions were established on later development eggs selected according to their external morphological appearance. At this stage, ocular pigments and appendages were visible through transparent chorion. The eggs fixed to glass slides, were submerged in the formulations and maintained at 28°C, 75% RH and photoperiod 12: 12 h, the optimal conditions for the embryonic development at laboratory. Low ovicide activity was found for commercial lotions, but enhanced egg mortality appeared when 1-dodecanol aliphatic alcohol was included in the formulation.

The high prevalence of head lice in Argentina may be due the low insecticide and ovicide effectiveness of most of the commercial products and due the permethrin resistance detected for field populations from Buenos Aires. Recently 2 commercial capillary lotions based on d-phenothrin and 1-dodecanol, have been found fully effective against susceptible and permethrin resistant head lice. One year after introduction, these commercial formulations accounted for 65% of the pediculicide marketed. The development of effective formulations and an adequate management of permethrin resistance, could be considered two important factors in the chemical control of head lice from Buenos Aires.