

Editorial

New Advances in Head Lice

In the past years, head lice infestations have increased in many countries all over the world, with important consequences for the health sector. However, little attention is given in the scientific literature on this topic. Thus, the present special issue is aimed to highlight new developments in the field of head lice. A focus is given on resistance studies to commonly used pediculicides with a neurotoxic mode of action, new treatment options, diagnosis and transmission.

John Clark's up-to-date review on laboratory methods used for monitoring permethrin resistance also presents data on resistance, detected in 10 out of 14 examined countries throughout the globe. The head lice were characterized by determining prevalence, allele frequency and allele zygosity of three gene mutations of the voltage-sensitive sodium channel, known to reduce the sensitivity of head lice to permethrin. Interestingly, in about $\frac{3}{4}$ of all head lice populations, he detected the presence of knockdown resistance alleles.

Due to this increasing resistance, treatment options are limited. As a consequence, head lice therapy is at the edge of a paradigm shift, from the common use of pediculicides with a neurotoxic mode of action mainly to those acting by physical means. Recently, several studies have been performed to assess the efficacy of new compounds containing dimeticone, spinosad, ivermectin or benzyl alcohol. We present exemplarily dimeticones and their use in head lice therapy. These silicone oils have a proven physical mode of action and are the compounds with most evidences available (*ex vivo* and clinical studies). High concentration two-phase dimeticone has been shown to reveal excellent clinical, pediculicidal and ovicidal efficacy, and the development of future resistance is virtually inconceivable.

Hermann Feldmeier's up-to-date review presents most current data on diagnosis of pediculosis. Diagnosis of head lice infestation is a crucial aspect for treatment and control. He describes, based on evidence, that wet combing has a sensitivity of more than 90% for diagnosis of active infestation and that in resource-poor settings self-diagnosis is a feasible approach.

Deon Canyon and Rick Speare from the James Cook University in Australia discuss another controversial issue, the indirect transmission of head lice *via* inanimate objects. Their review focuses on current evidence available from experimental and field studies regarding fomite transmission. They conclude that data on this topic are still scanty and that additional studies are needed to define whether head lice on inanimate objects constitute an important transmission route.

Finally, Susanne Sonnberg *et al.* present their studies on development of head lice eggs, by adapting a historical method for rearing eggs, published decades ago. They describe systematically the development of eggs under standardized conditions and show that continuous feeding of adult head lice on a human host is a feasible approach to obtain eggs of known age and with a high hatch rate.

As the field of pediculosis is growing permanently, this special issue cannot be a comprehensive review on all new topics. However, we believe that the up-to-date selection is of great interest for readers and that it provides important information for head lice management and control.

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