Thoughts on combating resistance to chemotherapeutants in sealice

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The incidence of resistance to chemotherapeutants in the sealice *Lepeophtheirus salmonis* and *Caligus rogercresseyi* has increased markedly over the last ten years. There are undoubtedly strong similarities in the forces driving selection for resistance in the northern and southern hemispheres, and in the ways that the build-up of resistance might be countered. Resistance has been studied in most detail in Norway, where decreased sensitivity has been recorded to most available treatments, including emamectin benzoate, cypermethrin, deltamethrin, azamethiphos and hydrogen peroxide. Extensive monitoring of resistance in Norway has also documented the spread of resistance both geographically and over time in response to varying intensities of chemical use. Approaches for monitoring resistance are changing as a consequence of research into possible mechanisms. The severity of resistance currently being reported demands a reappraisal of approaches to sealice control, addressing some of key factors known either to promote the speed at which resistance genes are selected, or to reduce the severity of resistance. Many of the tactics available or likely to become available as components of sustainable Integrated Pest Management (IPM) strategies have parallels with ones advocated for combating resistance in agricultural pests. These include exploiting host resistance, biological control and strategically-timed treatments to reduce overall reliance on chemicals, and the alternation of compounds from different mode of action groups to avoid selecting continuously for the same resistance mechanism. In regions where the spectrum of resistance is already very broad, this begs the question of whether new molecules are likely to become commercially available in the foreseeable future. Regular monitoring of susceptibility remains essential for informing the design of control strategies and for establishing how resistance levels are responding to whatever countermeasures are being implemented.