

Garlic for Lice and Flatworms



LITERATURE SUMMARY: Application of garlic flavors against ectoparasite infestations in aquaculture

As aquaculture increases the density of farmed species, so too does it increase the risk of pathogen and parasite transmission between animals within the operation. In response, the Norwegian government has gone so far as to develop a national salmon lice monitoring system due to the significance of salmon farming in that country¹. However, concerns exist regarding the impact of in-feed medications on the wider environment. This has led to research in to various natural ingredients, including garlic.

Sea Lice

Early work showed the potential, when 10% garlic (on wet basis) significantly lowered sea lice levels on farm raised salmon after 14 d, but an equal amount of onion did not². As with fly and tick mitigation in cattle, the mode of action appears to be that the diallyl sulfide and related compounds in garlic deter the pests from approaching the host³.

An *in vitro* Y-tube behavioral bioassay showed that despite having a strong preference for water conditioned with the odor of salmon, the addition of garlic derived compounds to water dramatically reduced the likelihood of the salmon louse reacting to that scent. Whereas 77% of copepodids approached the salmon scented water without garlic compounds, only 45% approached salmon scented water containing 50 ppt of diallyl disulfide, and only 29% approached when the water contain 10 ppt of diallyl sulfide. Suggesting a role for garlic in deterring salmon lice from approaching and infesting an operation

Flatworms

Flatworm intensity (*A. penilabiatius*) was reduced by feeding garlic powder at up to 2 g/kg to Small-Scaled Pacu (figure 1)⁴. Effect was greatest at 15 days on garlic supplemented feed, and tapered off over time as the level of infestation also naturally tapered off. Reduced intensity of infestation resulted in improve hematology (increased erythrocytes and thrombocytes, and decreased lymphocytes).

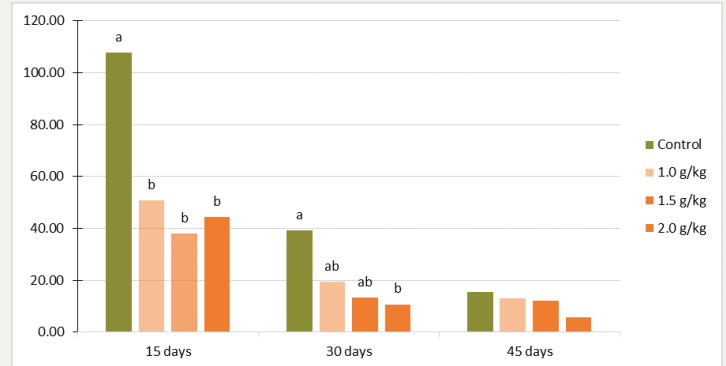


Figure 1. Mean parasite intensity (parasite per fish) in small-scaled Pacu fed diets containing graded levels of garlic powder (0, 1.0, 1.5, and 2.0 g/kg of feed)⁴. Within day, means without common superscript differ ($P < 0.05$).

In another flatworm study, garlic application to the water accelerated death and detachment of parasites from the gills (figure 2), and reduced prevalence (from 75% to 6.1%; $P < 0.05$) and intensity of infestation (from 12.5 to 0.3 parasites per fish; $P < 0.05$) after 1 hr of exposure⁵. That same study also showed that oral garlic reduced cumulative mortality over 14 days. From 25% for the control to 11.7 for direct addition of minced garlic to the water, and to 8.3% when garlic powder was incorporated into the diet at 20%.

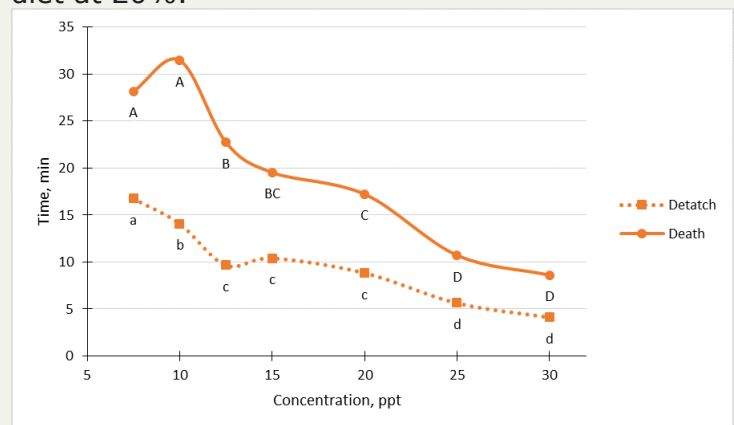


Figure 2. In vitro efficacy of garlic extract on mean time to detachment and death of flatworms. Within response, points with differing superscripts differ ($P < 0.05$).

Summary

In conclusion, published trials suggest some potential for garlic in deterrence of some parasites. If you would like to explore the potential of Feedbuds® garlic flavors in your aquaculture feeding program please contact your local QualiTech representative.

References

1. <https://doi.org/10.1371/journal.pone.0201338>
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