

Evaluating the anthelmintic potential of marine extracts

Lincoln Tubbs

National Institute of Water and Atmospheric Research (NIWA)
New Zealand
Fish Pathology Laboratory, Ontario Veterinary College
University of Guelph, Canada

Bin Wang, Mark Hamann

Department of Pharmacognosy, School of Pharmacy, University of
Mississippi



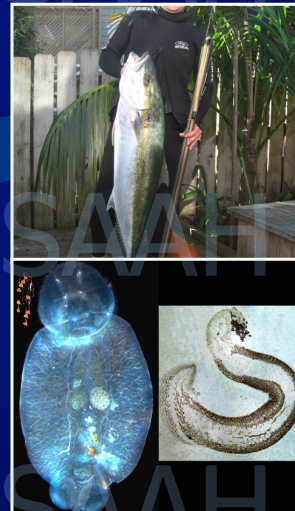
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Model relationship

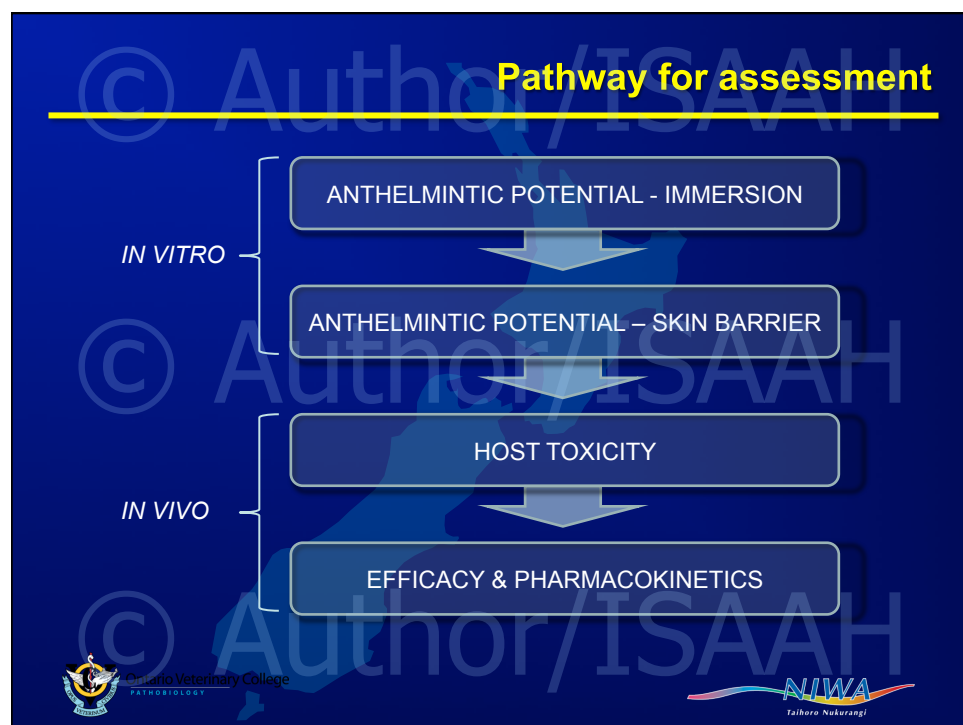
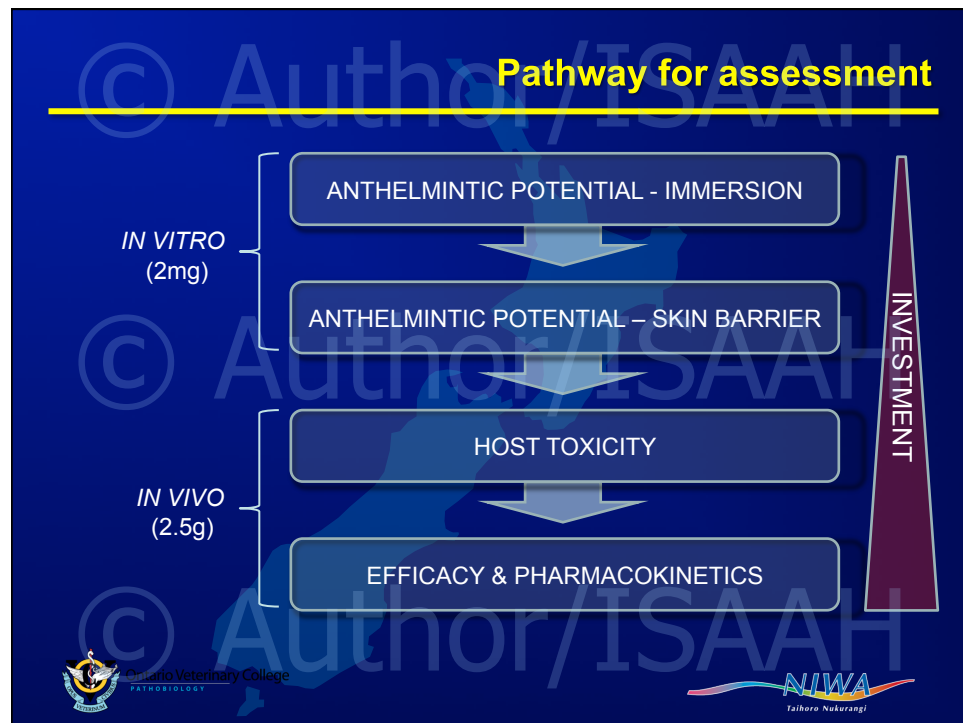
- Kingfish (*Seriola lalandi*) – popular aquaculture species
- Sea-cage culture common
- Monogenean parasites cause morbidity and mortality
- Current treatments:
 - Bath (hydrogen peroxide, fresh water, formalin)
 - Oral (praziquantel – Hadaclean®)



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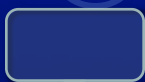


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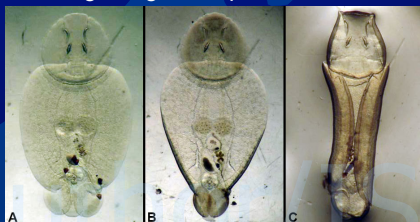


Broad screening via immersion

IMMERSION



- 35 compounds extracted from marine organisms
 - Controls: PZQ (+ve), Water (-ve), DMSO (-ve)
- Settle *B. seriolae* from infected fish in petri dish
- Expose duplicates to 1, 10 or 100uM of each compound (2mg starting material)
- Score behavioural / morphological change
 - Movement, response to stimuli
 - Curling margins, haptor attachment, colour



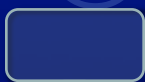
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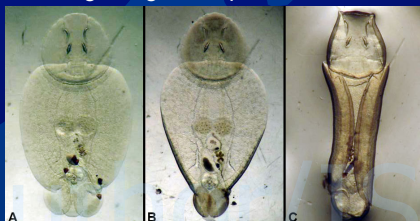
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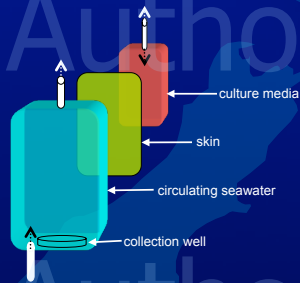
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Potential across skin barrier



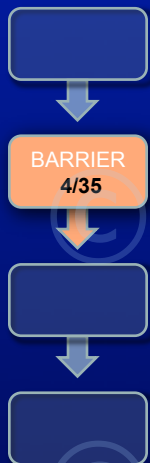
- Correlate concentration and effectiveness
- Settle *B. seriolae* from infected fish on skin
- Expose to 1, 10 or 100uM PZQ
- Detachment as effective endpoint



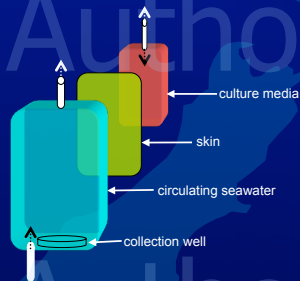
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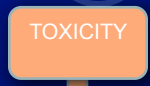
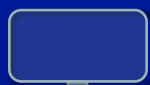
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Preliminary host toxicity



- Individual fish evaluated by escalating dose
- Oral dose 1-500 mg.kg⁻¹ body weight
 - Duplicates (n=3)
- Endpoint: LD₅₀

| Dose (mg.kg ⁻¹) | KF | IL | PL | MA | PZQ |
|-----------------------------|----|----|----|----|-----|
| 1 | | | | | |
| 5 | | | | | |
| 25 | | | | | |
| 50 | | | | | |
| 100 | | | | | |
| 250 | | | | | |
| 500 | | | | | |

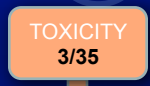
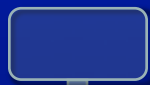


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Preliminary host toxicity



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In vivo efficacy

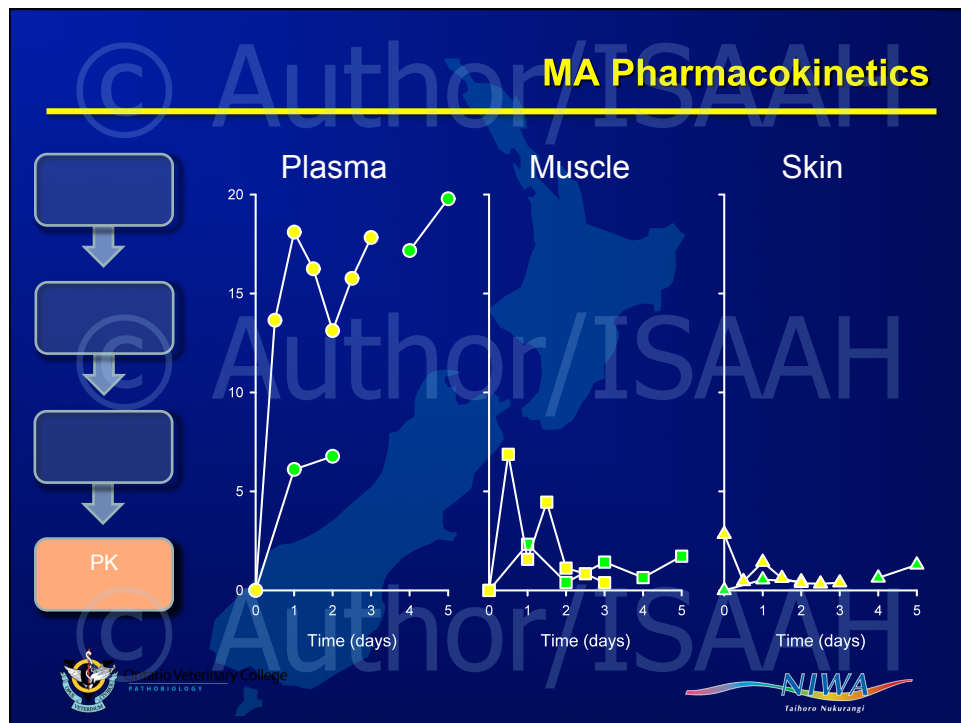


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In vivo efficacy



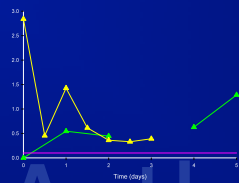
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MA Pharmacokinetics



PK
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Skin



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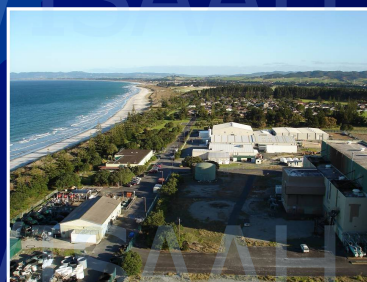
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Conclusions

- *In vitro* techniques useful for evaluating potential efficacy
 - Particularly limited quantities
- Pharmacokinetic data useful for evaluating empirical regimens
- Only preliminary indication, full registration significantly more effort

Acknowledgements

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