Techniques of diagnosis in fish pathology for *Platax orbicularis* breeding program

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Presentation overview

- Background on *Platax orbicularis* breeding program
- Introduction on fish diseases
- Techniques developed for diagnosis in *Platax orbicularis* breeding
- Perspectives: Aquatic animal health program
Background

• 2003: *Platax orbicularis* breeding program
• 2004: first massive mortalities
• 2005: Prophylaxis program start
Introduction on fish diseases

- Pathogens
- Environment
- Disease
- Fish physiology
Wet mount

- Observation of parasites
- Identification with morphological criteria
- Diagnosis ectoparasitose
- Example: grow out in sea cage
  - Pathogen: Benedenia sp.
  - Prophylactic treatment: Peroxyde hydrogen (H₂O₂)

Efficacity of preventive treatment

<table>
<thead>
<tr>
<th>Time</th>
<th>Presence of Benedenia sp. (%)</th>
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<tbody>
<tr>
<td>T0</td>
<td>10%</td>
</tr>
<tr>
<td>T1</td>
<td>50%</td>
</tr>
<tr>
<td>T2</td>
<td>90%</td>
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</tbody>
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Témoin - Témoin
Bacteriology

• Culture and Isolation
• Identification by phenotypic criteria
• Example: genitors
  – Pathogen: *Vibrio sp.*
  – Curative treatment: Oxytetracycline
  – Preventive treatment: improvement of zootechny

Tissue sample

Isolation and culture
Marine agar and TCBS agar

Phenotypic Identification
Api Gallery
Histology

• Internal observation:
  – Abnormalities
  – Parasites

• Identification by morphological criteria

• How to know if a tissue is abnormal?
  – Data base of reference slides of Platax

• Example of parasite observation:
  – Lymphocystose caused by a virus
Molecular biology

- Example: hatchery
  - Pathogen: Nodavirus
  - Curative treatment: none
  - Preventive treatment:
    - UV treatment of water
    - Screening of free-nodavirus broodstock

In situ hybridization in eye of *Platax orbicularis*

PCR quantitative
Zootechnic improvement

• Gross observation
  – Observation of environmental conditions
  – Observation of fish behaviour

• Hatchery :
  – Desinfection of water, material, before entry (visitors)
  – Physical isolation of each area (larval, broodstock, artemia...)

• Sea cage :
  – Preventive treatment
  – Cleaning of structure (net, flotting cage...)

Dark fish

Sea cage preventive treatment
Health monitoring, for a sustainable aquaculture of *Platax orbicularis*

- Thank for all thoses technics and improvements we don’t observe high mortalities since 2006
- In 2010, a Technical Aquaculture Center will start and produce *Platax* juveniles for farmers
- Zootechnic of *Platax* breeding will be transfered to the TAC and farmers
- Zoosanitary assistance is needed to set up a sustainable aquaculture
Thank you for your attention