

BIOASSAY FOR THE TREATMENT OF WATER AND SPANISH NAUPLES IN
FARALLON AQUACULTURE SA

May 09 / May 10, 2019

1. CONTEXT

On the understanding that the reproductive female has bacteria attached throughout her body, together with the knowledge that the interior of the eggs is sterile, whenever we talk about bacteria, it is easy to deduce that bacteria enter the nauplii system during spawning, and during the washing thereof. Bacteria in the water column look for a substrate to adhere to. On the basis of this platform, a follow-up test would be aimed at treating the water with BioPhoton-X™ technology, spawning and washing, so that the results can be compared with the traditional FARALLON protocol.

2. OBJECTIVES

- . Validate the impact of BioPhoton-X™ technology on the bacterial growth of nauplii.
- . Define the strategy for the use of technology in the commercial process of the Farallón laboratory.

3. PROCESS

- 6 tanks of 500 liters will be taken, of which 2 are filled with water from the mass, placing 3 females in each one for their spawning. Likewise, the other 4 tanks with the same number of females with the same water origin, but previously treated with treatment 1 (T1) and treatment 2 (T2).
- At the time of placing the females that are going to spawn, a water sample will be taken both in the control and in the treatment.
- Once the spawned females and those that have not spawned are removed, a sample of the water from the control and treatment tanks is taken to quantify the bacterial load present.
- At the time of harvesting the nauplii, samples of these will be taken to be macerated in the controls and treatments.

4. EXPECTED RESULTS.

The bacterial load of the nauplii in combination with the water will demonstrate the positive effect of the treatment by presenting a lower count of the bacterial colonies.

TEST WITH WATER AND
NAUPLIOS
Microbiology Foils

05/09/2019

TCBS agar

	YELLOW	GREEN	BIO	Black
Control water before spawning	0	0	0	0
Control water after spawning females	5	0	0	0
Treatment 1 before spawning	one	0	0	0
Treatment 1 after spawning females	35	0	0	0
Treatment 2 before spawning	4	0	0	0
Treatment 2 after spawning females	6	0	0	0

In the case of water, let us remember that we use water for spawning, obtaining samples for control and treatment 1 and 2. Once the females spawned, 3 females from each tank were taken from them, control and treatments, water samples .

The above table allows us to conclude that the water at the time of spawning had a low bacterial load, which speaks positively of the protocol for the preparation of spawning water.

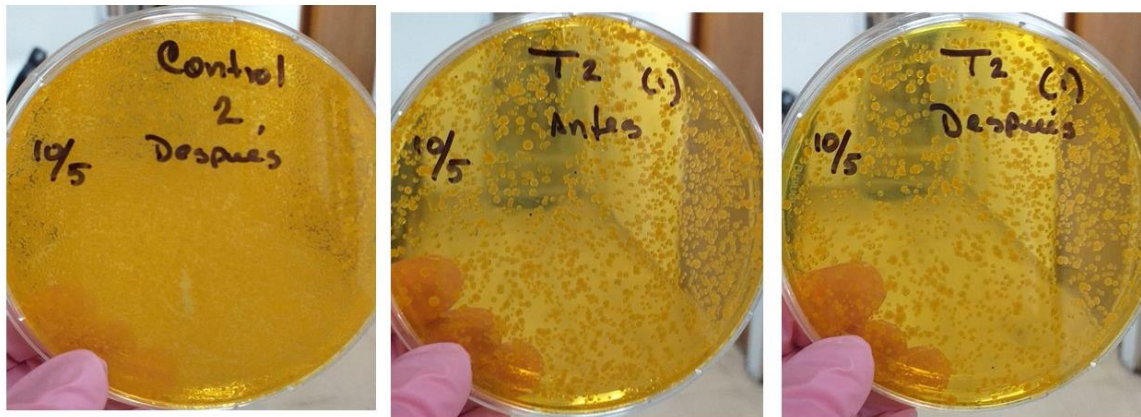
TCBS
agar

NAUPLIOS	YELLOW	GREEN	BIO	Black
Control 1 before washing the nauplii	1,000	0	0	0
Control 1 after washing the nauplii	1,000	0	0	0
Control 2 before washing the nauplii	1,000	0	0	0
Control 2 after washing the nauplii	1,000	0	0	0
Trat. 1 (1) before washing the nauplii	1,000	0	0	80
Trat. 1 (1) after washing the nauplii	1,000	0	0	two
Trat. 1 (2) before washing the nauplii	1,000	0	0	0
Trat. 1 (2) after washing the nauplii	1,000	0	0	0

Trat. 2 (1) before washing the nauplii	900	0	0	3
Trat. 2 (1) after washing the nauplii	800	0	0	one
I tried. 2 (2) before washing the nauplii	1,000	0	0	0
Treatment 2 (2) after washing the nauplii	1,000	0	0	0

It is clearly observed that the bacterial contamination comes between the spawning of the females and the moment of the harvest and the washing of the nauplii. Both the 2 control tanks and 2 tanks from treatment 1 and 2 presented equal values before washing the nauplii and after washing. (1,000 colony-forming units.)

It should be noted that one of the tanks of treatment 2 presented a decrease of 10% before washing and of 20% with respect to the washing of the nauplii, when compared with the controls and treatment 1.



The images of the plates show a greater dilution of the bacterial load in the case of treatment 2, as can be seen.

Likewise, we highlight that in this test the air-water exchanger material ABS (plastic) used in the treatments was not indicated because it retained a considerable bacterial load after the first treatment done on day 9/5.

For future tests we will use our Copper and / or Stainless Steel equipment

A new trial would be aimed at the use of treatment 2 in the mass and the preparation of the washing water, which would allow evaluating the results in a commercial setting.

