

Talk

Industrial use of *Caenorhabditis elegans* in aquaculture.



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ABSTRACT

Motivation: Larvae of most aquatic animal species with commercial interest need live food. To date, *Artemia* sp. is the live food most employed in aquaculture. Although widely use it, *Artemia* presents several serious problems. Its price is expensive and very variable, coupled with important nutritional deficiencies. The search of alternative food is becoming important in the last years. In this work, the model organism *Caenorhabditis elegans* is proposed as substitute or complementation to *Artemia* in larviculture. The regular medium for growth *C. elegans* is based in *Escherichia coli*, which is not admitted in aquaculture industry. In order to overcome this problem we are developing a new medium to cultivate *C. elegans*.

Methods: *C. elegans* was growth in liquid medium at 20°C with agitation of 120 rpm/min. To optimize nematode growth for industrial proposes different microorganisms were tested (yeast, *E.coli*, *Pseudomonas fluorescens* and *Bacillus subtilis* among others).

Salt adaptation of *C. elegans* was carried out transferring 10 L4 to NGM plates with a progressive increase of salt concentration. When nematodes survived in salt concentration similar to salt in sea water nematodes were transferred to liquid medium.

Cold adaptation was performed by subjecting nematodes plates at 4 ° C for different periods of time. After these periods nematodes are returned to 20° C and survival is analyzed. Following cold adaptation optimization in plate, cold adaptation was tested in liquid medium.

Results: : Medium based in *P.fluorescens* reaches a production up to 100.000 nematodes/ml similar to the regular medium based on *E. coli*. *B. subtilis* and yeast reaches a lower production 40.000 nematodes/ml and 5.000 nematodes/ml respectively. Salt adaptation of nematodes growth in *E.coli* was achieved successfully as well cold adaptation.

Conclusions: We have obtained different protocols to growth *C. elegans* that can be attractive to the aquaculture industry.

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