



INVE AQUACULTURE NUTRITION
LIVE FEED &
ENRICHMENT DIETS



TRADITIONAL SELCO® ENRICHMENTS

DHA PROTEIN SELCO®

SPECIFICALLY DESIGNED FOR ENRICHING ROTIFERS

ENRICHES WITH WELL-BALANCED NUTRITIONAL VALUES

SUPPORTS THE GROWTH OF THE ROTIFERS DURING ENRICHMENT

EASY DHA SELCO®

SPECIFICALLY DESIGNED FOR ARTEMIA ENRICHMENT

EASY PREPARATION: VERY EASY TO DISPERSE IN WATER

DHA ENHANCED FOR THE BEST ENRICHMENT RESULTS

EASY STORAGE WITH EXCELLENT TEMPERATURE STABILITY

Rotifers and Artemia are crucial for the early feeding of (marine) fish larvae. Apart from making sure the nauplii are properly hatched and the rotifers are optimally cultured, a second important step is enriching these organisms before feeding them to the larvae.

Having been at the forefront of reliable, easy to use enrichments since 1983, INVE Aquaculture today still brings you its two "traditional" selco® enrichments, one powdered for rotifers and one liquid for Artemia:



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DHA PROTEIN

SELCO®

ROTIFER ENRICHMENT - DHA PROTEIN SELCO®

DHA PROTEIN SELCO® is a powdered enrichment product for rotifers, designed to compensate for the nutritional short-comings of rotifers as a natural feed for fish larvae. The use of **DHA PROTEIN SELCO®** on the last day of the culture cycle will increase the rotifer's quality. Enriching the live preys with essential components such as vitamins EPA and DHA.

TANK PREPARATION

- Clean and disinfect the enrichment tank, airstones and air tubing prior to use (use e.g. 200 g/m³ active chlorine + detergent) and rinse well.
- Disinfect the water of the tank with e.g. 10 ppm OCl⁻ and aerate gently for ± 1 hour.
- Deactivate any remaining chlorine by adding 12 ppm sodiumthiosulphate.

OPTIMAL CONDITIONS

Rotifers	
Density	1000-2000 per ml
Salinity	20-30 ppt
Temperature	25-27°C
Oxygen	higher than 5 ppm. Use leaky pipe or fine bubble device
Aeration	medium-strong open tube to keep animals suspended

PREPARING THE PRODUCT

Fill a container with lukewarm fresh water (35-40°C)

1. Switch on Blender and create vortex in water
2. Slowly add the product to the water (max. 50 g/liter)
3. Continue Blending for 3-5 minutes.

Apply according to selected enrichment strategy.

USEFUL POINTERS

- Always gently harvest from the culture tank the rotifers in a filter bag to avoid physical stress.
- Make sure the rotifers are always submerged, avoid "splashing" in the filter.
- After harvest, rinse the rotifers using same water T°C as the culture tank.
- First add the enrichment (or background feeding), then the rotifers.
- Use S.parkle as background feeding if enrichment does not take place right after the harvest.

AVAILABLE PACKAGING

Box of 5 x 1 kg alufoils.

STORAGE/SHELF LIFE

The product should be stored in a cool, dry place (max. 10°C). Once opened, it should be used within one month, kept well closed when not used and stored in a refrigerator. Do not freeze. The shelf life is 24 months from the date of manufacturing.

TYPICAL COMPOSITION

GUARANTEED

crude fat	28.5%
crude protein	27%
crude ash	9%
phosphorus	0.7%
sodium	0.1%
crude fibre	0.1%
calcium	0.1%
DHA	56 mg/g dwt
EPA	13 mg/g dwt

ADDITIVES

VITAMINS

vit. A	3a672b	80,000 IU/kg
vit. D3	3a671	7,500 IU/kg

ANTIOXIDANTS

BHA	E320	50 mg/kg
BHT	E321	50 mg/kg
propyl gallate	E310	100 mg/kg

ENRICHMENT QUANTITY

The Enrichment quantity is based on the rotifers density and the volume of the water in the tank. To determine the rotifer density, the amount of rotifers must be counted before the start of the enrichment. Once the rotifer density has been determined, the corresponding feed rate can then be determined based on the table below:

Rotifer density (rot/ml)	Feed rate (g/m ³)
400 - 500	250
500 - 1000	350
1000 - 2000	550
more than 2000	750

WHEN TO APPLY?

Apply in two rations:

Apply the first half of the calculated enrichment quantity at the beginning of the enrichment cycle.

Apply the other half of the calculated of the enrichment quantity, 3 hours after the start of the enrichment cycle.

The enrichment is completed and the rotifers can be harvested after 6 hours.

ROTIFER COLD STORAGE

Temperature 5-8°C

Density Rotifer up to 20 million per liter

Oxygen 4-6ppm (use soft point aeration and diffuser collar)

Salinity 25-38ppt

EASY DHA

SELCO®

ARTEMIA ENRICHMENT - EASY DHA SELCO®

EASY DHA SELCO® is a liquid enrichment product for Artemia, designed to supplement the natural nutritional features of the nauplii to ensure an optimal feed for the fish larvae.

TANK PREPARATION

- Clean and disinfect the enrichment tank, airstones and air tubing prior to use (use e.g. 200 g/m³ active chlorine + detergent) and rinse well.
- Disinfect the water of the tank with e.g. 10 ppm OCl⁻ and aerate gently for ± 1 hour.
- Deactivate any remaining chlorine by adding 12 ppm sodiumthiosulphate.

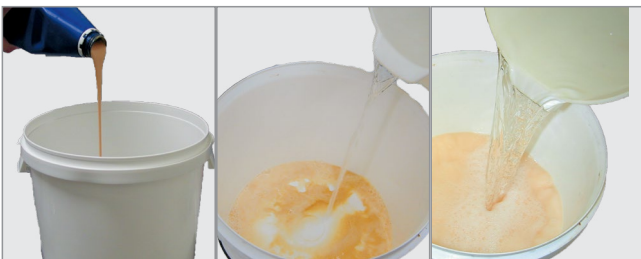
OPTIMAL CONDITIONS

	Artemia
Density	300-400 nauplii per ml
Salinity	25-40 ppt
Temperature	26-28°C
Oxygen	> 5 ppm. Use leaky pipe or fine bubble device
pH	7.5-8.5 (by buffering)
Aeration	medium-strong open tube to keep animals suspended

PREPARING THE PRODUCT

Pour the required amount of product into a dry bucket. Use a strong water jet pour the water in from a bucket (splashing) to emulsify 150g of product per liter of (sea) water.

or add the product to the water (max 300g/liter) and blend for 3-5 minutes.



AVAILABLE PACKAGING

Box of 9 x 1 kg bottles.

STORAGE/SHELF LIFE

The product should be stored in a cool, dry place (max. 10°C).

Once opened, it should be used within one month, kept well

closed when not used and stored in a refrigerator. Do not freeze.

The shelf life is 24 months from the date of manufacturing.

TYPICAL COMPOSITION

GUARANTEED

crude fat		66%
moisture		33%
crude protein		0.5%
crude ash		0.3%
phosphorus		0.1%
crude fibre		0.1%
calcium		0.1%
sodium		0.02%
DHA		150 mg/g dwt
EPA		50 mg/g dwt

ADDITIVES

VITAMINS

vit. A	3a672b	1,600,000 IU/kg
vit. D3	3a671	150,000 IU/kg

ANTIOXIDANTS

BHA	E320	27 mg/kg
BHT	E321	27 mg/kg
propyl gallate	E310	100 mg/kg

ENRICHMENT STRATEGY

- Use 600 ppm of product in two times (300ppm at T0 and T12).
- Enrich for a period of 20-24 hours.
- Harvest and wash gently the Artemia before feeding supplying them to the fish larvae.

ARTEMIA COLD STORAGE

Temperature 5-8°C

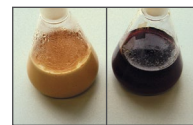
Density Nauplii up to 5 million per liter

Oxygen 4-6ppm (use soft point aeration and diffuser collar)

Salinity 25-38ppt

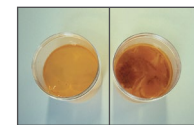
STABILITY TEST

1 week at 70°C



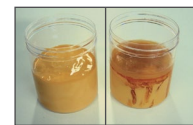
Easy SELCO® Traditional emulsion

2 days at -18°C



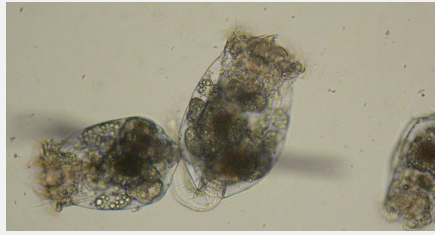
Easy SELCO® Traditional emulsion

2 days at -18°C



Easy SELCO® Traditional emulsion

A QUICK GUIDE TO ENRICHMENTS



I. What is an enrichment?

Enrichment in modern marine larviculture are ingredients or products, which are fed to the live food (usually to rotifers and Artemia) to enhance the nutritional or functional properties of live preys to the benefit of fish larvae.

It is therefore important:

1. To maximise enrichment availability to live food.
2. To respect correct preparation, dosages, timings and parameters.
3. Resulting in optimal enriched live food that secures efficient nutrient transfer to fish larvae.

1. Evaluation of the enrichment

This can be done under a microscope looking at the internal organs of the live prey. However, this only provides a very rough indication of the enrichment efficiency.

Enrichment performances need accurate analytical methods. We advise you to contact your INVE Aquaculture representative for more information.

2. Dispersion in the water

It is very important to know that the better the enrichments are blended (dispersed into water), the easier it will be for the live food to catch and filter the essential nutrients.

In other words: the live food will be better enriched at the end of the enrichment phase, ultimately saving you costs because the live food will be more nutritional for the fish larvae.

II. What type of enrichment are available?

Enrichments are made in 2 main forms: liquid emulsions and dry powders. Both work via the ingestion (bioencapsulation) by the live food, which make available thenutritional qualities of the enrichment products to the fish larvae.

3. Avoid live food starvation

Live food have high metabolism and thus will consume enrichment this is influenced by Temperature. In order to reduce this effect, soon after enrichment is terminated. Live food is harvested washed with clean water and either fed to larvae or kept at low temperatures 5-8°C for maximum 24h. Never store enriched live food at ambient T°C as a large part of the enrichment will be lost.

4. Tips & tricks: rotifers

Never leave the rotifers hungry when starting the enrichment. Starvation will decrease their resistance stress and will decrease enrichment efficiency.

Monitor O2 levels constantly keeping it over the minimum advised level.

It is important to know that during the enrichment stage, rotifers will prefer to take up oil droplets, making them lighter and allowing them to float on the water surface. This floating phenomenon will occur especially in separate enrichment tanks with clear water. To avoid this, add a small quantity (50ppm) of culture diet - Sparkle or Roboost - in order to increase the viscosity in the enrichment tank.

III. How to optimally use an enrichment?

For optimal effect, the enrichments need to be dispersed in the water via a strong mechanical process (blending) and put into the enrichment tank where the live food will Filter-feed on the small particles.

5. Tips & tricks: Artemia

Artemia can be enriched starting from Instar II nauplii. For the best enrichment we advise to check the hatching kinetics or contact your INVE Aquaculture representative.

Monitor O2 and pH levels, constantly keeping them over the minimum advised values.

Because of nutrient rich medium during enrichment microbial population might drastically increase. In order to control this effect and improve enrichment uptake by nauplii INVE Aquaculture strongly advises the use of Sanocare® ACE during hatching and enrichment.



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To the best of our knowledge, the technical data in this technical card is accurate and reliable as of the date of publication. We do not assume any liability for the accuracy and completeness of the above information. Please inspect and test our products in order to satisfy yourself as to the suitability of the products to their particular purpose.

For more information, please contact your local INVE Aquaculture Service Center or take a minute to visit our website:

www.inveaquaculture.com

