

# 'Tailor-made' nutritional additives for aquaculture

## ABOUT US

*Nutra-Kol* is a vibrant Australian company focusing on the nutrition and health of aquatic organisms. *Nutra-Kol* products include feed additives and natural health solutions for the aquaculture industry. These products are scientifically designed and tested in collaboration with commercial hatcheries, research and development centres, universities and fish farmers. The products are based on natural ingredients with the majority of them produced in Australia.

*Nutra-Kol* is Western Australia based, supplying worldwide.

## *NutraBrood*

### 'tailor-made' broodstock additives

*Nutra-Brood* is a new feed additive designed to enhance the nutrition of fish and other marine organisms (i.e. crayfish, crabs etc.) broodstock.

*Nutra-Brood* comes as liquid oil emulsion that can be injected into the fresh food. It contains essential fatty acids, vitamins, minerals and other essential nutrients. In many cases, a specific formulation may be required due to fish species, environment conditions etc.



*Nutra-Brood* can be 'tailor-made' to any fish species and can include any essential nutrients such as vitamins, immunostimulants, HUFA's (at desired levels and ratios), carotenoids etc.

Specific formulations are already in use by commercial hatcheries for yellowtail

kingfish (*Seriola*),

mahi-mahi, gilthead seabream and several crustacean species.

*Nutra-Brood* can be supplied in any quantity and to any formulation requirement.



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## *Arti-Kol*

### 'tailor-made' live food enrichment

*Arti-Kol* is a new concentrated live feed enrichment emulsion designed to enhance the nutrition profile of rotifers and *Artemia*. *Arti-Kol* is designed to enhance the stress resistance and the immune system of fish larvae.



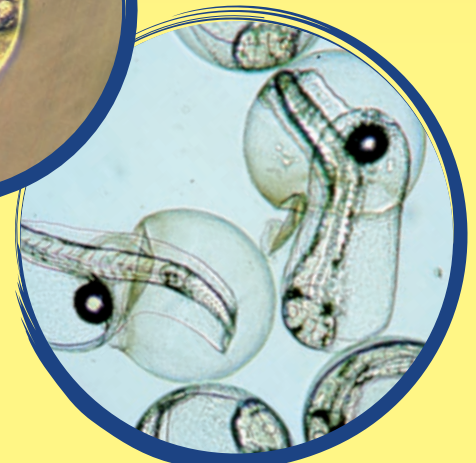
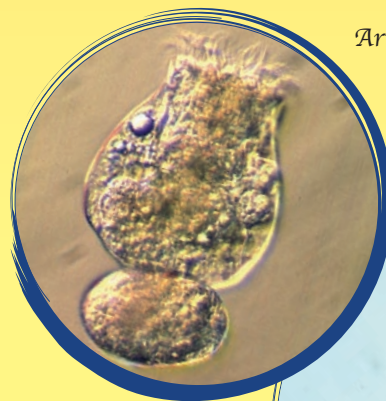
In many cases, determination of nutritional requirements of fatty acids and other nutritional components is done by comparing commercially available enrichments differing in their EFA or other nutrients.

In some cases, especially with new species or susceptible larvae or for nutritional trials, different levels and/or other ingredients are needed in the enrichments. Currently, there are no commercially available 'tailor-made' enrichments aimed at research institutes as well as commercial hatcheries.

Unlike any other off-the-shelf commercial enrichments, *Arti-Kol* is a 'tailor-made' enrichment that can be designed to suit any nutritional requirements.

*Arti-Kol* users include, commercial hatcheries (especially hatcheries working with new species and/or sensitive species), universities and R&D centres (*Arti-Kol* is ideal for any larval nutritional study).

*Arti-Kol* can be supplied in any quantity and to any formulation requirement.



# Examples of 'tailor-made' additive uses

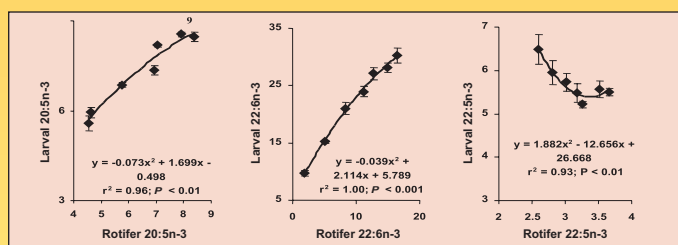
## Determining the dietary requirement for 22:6n-3 of striped trumpeter *Latris Lineata* larvae using a dose-response technique.

Bransden et al. (*Lipids* 39(3): 215-222)



The study aimed to determine the dietary requirement for 22:6n-3 of striped trumpeter (*Latris lineata*) larvae during early development and the rotifer (*Brachionus plicatilis*)

feeding period. A novel dose-response design, seldom used in larval marine fish studies was employed. Seven experimental emulsions were formulated with increasing concentrations of 20:5n-3 and 22:6n-3 and used to enrich rotifers.



Relationships between tissue and dietary (rotifer) concentrations (mg/g DM) of 20:5n-3, 22:6n-3 and 22:5n-3 in striped trumpeter larvae at 18 dph.

## The effect of PUFA enriched Artemia on growth, survival and lipid composition of western rock lobster, *Panulirus cygnus*, phyllosoma.

Liddy et al. (*Aquaculture Nutrition*, accepted)



The effect of docosahexaenoic acid (DHA) and arachidonic acid (AA) on Western rock lobster, *Panulirus cygnus*, phyllosoma growth and survival was determined. Larvae were fed with Artemia enriched with 'tailor-made' enrichments as follow: 1. Base enrichment, 2. Base enrichment supplemented with DHA, 3. Base

enrichment supplemented with AA, or 4. Base enrichment supplemented with DHA and AA. Addition of AA, and to a lesser extent DHA, to enrichments resulted in increased levels of those FA in Artemia and phyllosoma compared to the Base enrichment. Elevated growth and survival rates for phyllosoma to stage IV were achieved with DHA and AA enriched diets.



## Effect of 'mega' dose of vitamins C and E on stress resistance, survival and deformities in yellowtail kingfish *Seriola lalandi* larvae.

Bruce, M., Poortenaar, C., Gara, B. and Kolkovski, S.

(NIWA, New Zealand, in preparation)

An experiment was designed to test the effect of 'mega' dose vitamin C and E supplementation in rotifers and/or Artemia enrichments.

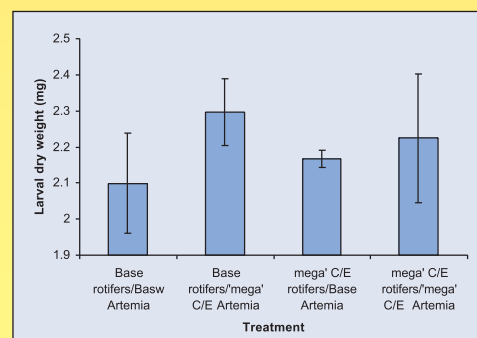


Two enrichments were manufactured; base enrichments with standard levels of vitamins C and E and 'mega' dose enrichment (3% each, on DM basis). Four feeding treatments were conducted. 1. base enriched rotifers followed by base enriched Artemia, 2. base enriched rotifers followed by 'mega' dose enriched Artemia, 3. 'mega' dose enriched rotifers followed by base enriched Artemia and 4. 'mega' dose enriched rotifers followed by 'mega' dose enriched Artemia.



Skeleton deformity in yellowtail *Seriola lalandi* larvae.

The effect of 'mega' dose supplementation of vitamins C and E in rotifers and/or Artemia enrichments on yellowtail kingfish *Seriola lalandi* larvae dry weight.



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