



Feed  
Quality

Oxy-Nil®

ETHOXYQUIN FREE!



## Anti-oxidant program for aqua feed



Aqua feeds are formulated with sensitive ingredients such as fish meal and fish oil which require effective oxidative protection throughout the production chain. On the other hand, the application of high dosages of synthetic anti-oxidants in the aquaculture food chain is increasingly rejected by the consumer.

The **Oxy-Nil® program**, maximizing on the synergism of selected anti-oxidant compounds and state-of-the-art production technology, offers effective oxidative protection without the use of ethoxyquin.

<b>Oxy-Nil® Aqua zero dry</b>	ethoxyquin free	Synergistic blend of ethoxyquin-free anti-oxidants and chelating agents.
<b>Oxy-Nil® Aqua zero liquid</b>	ethoxyquin free	Synergistic blend of ethoxyquin-free anti-oxidants (liquid product).



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**ADISSEO**  
A Bluestar Company



## PROBLEM DEFINITION

### Anti-oxidants in aquaculture: double sensitivity

- 1 Fish meal and fish oil are **extremely sensitive** to oxidative deterioration, which can affect health and performance of fish and shrimp due to:
  - reduction of nutritional value
  - loss of palatability (rancidity)
  - production of toxic compounds
  - reduced digestibility of protein and essential amino acids
  - destruction of carotenoids and fat soluble vitamins
- 2 Consumers are **increasingly sensitive** to the use of high levels of antioxidants such as ethoxyquin in the aquaculture food chain.



## OUR SOLUTION

### Designed for maximizing synergy and efficacy

Adisseo has designed a specialized Oxy-Nil® range for stabilizing fish meal and fish oil during manufacturing and storage, and further processing into aquafeeds.

<b>1</b>	<p><b>Synergistic combinations of anti-oxidants</b></p> <ul style="list-style-type: none"> <li>• more effective than single compound anti-oxidants</li> <li>• avoiding high tissue levels of the individual components in fish and shrimp</li> </ul> <p>Free Radicals are highly chemically reactive molecules. Unpaired reactive electrons of the Free Radicals are disarmed by protective anti-oxidant compounds.</p>	
<b>2</b>	<p><b>Ultra-homogeneous coating technology</b></p> <ul style="list-style-type: none"> <li>• for maximizing synergistic interactions between anti-oxidants and adjuvants (chelators) at the interface of the ultra-fine carrier material (powdered products)</li> <li>• optimized free-flowing and mixing characteristics</li> </ul>	
<b>3</b>	<p><b>Liquid carrier</b></p> <ul style="list-style-type: none"> <li>• formulated for easy dispersion with fats and oils and optimized liquid application (liquid products)</li> </ul>	

## COMPOSITION

Product name	Active components*			
	BHT	BHA	PG	Adjuvants (chelators)
Oxy-Nil® Aqua zero dry	✓	✓	✓	✓
Oxy-Nil® Aqua zero liquid	✓	✓	✓	

(\*) BHT=butylhydroxytoluene; BHA=butylhydroxyanisole; PG=propyl gallate

## APPLICATION

<b>Oxy-Nil® Aqua zero dry</b>	50 - 500 g/MT feeds & raw materials	100 - 1500 g/MT fishmeal
<b>Oxy-Nil® Aqua zero liquid</b>	50 - 500 g/MT feeds & raw materials	250 - 1500 g/MT fats & oils

Depending on the ingredient matrix and desired shelf life. See Product Info sheet for recommended inclusions per product. Adisseo offers customized optimization studies using the OXI-TEST technology.

## AQUACULTURE SPECIALTY PROGRAMS

<p>HEALTH</p>	<p>DIGESTION</p>	<p>PALATABILITY</p>	<p>SPECIALTY NUTRITION</p>	<p>FEED QUALITY</p>	<p>FARM CARE</p>
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