

Thai Union's Food Innovation

Issue: June 2021



Tuna's 5 Wonders



Thai Union's GIC has delivered significant innovations derived from various parts of tuna, to ensure every part of the fish is utilized to accelerate sustainability through high-value byproducts.



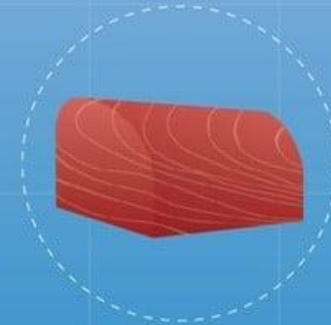
Oil from tuna head

Oil extracted from tuna head through cold-pressed process minimizes the impact on the oil quality versus using heat.



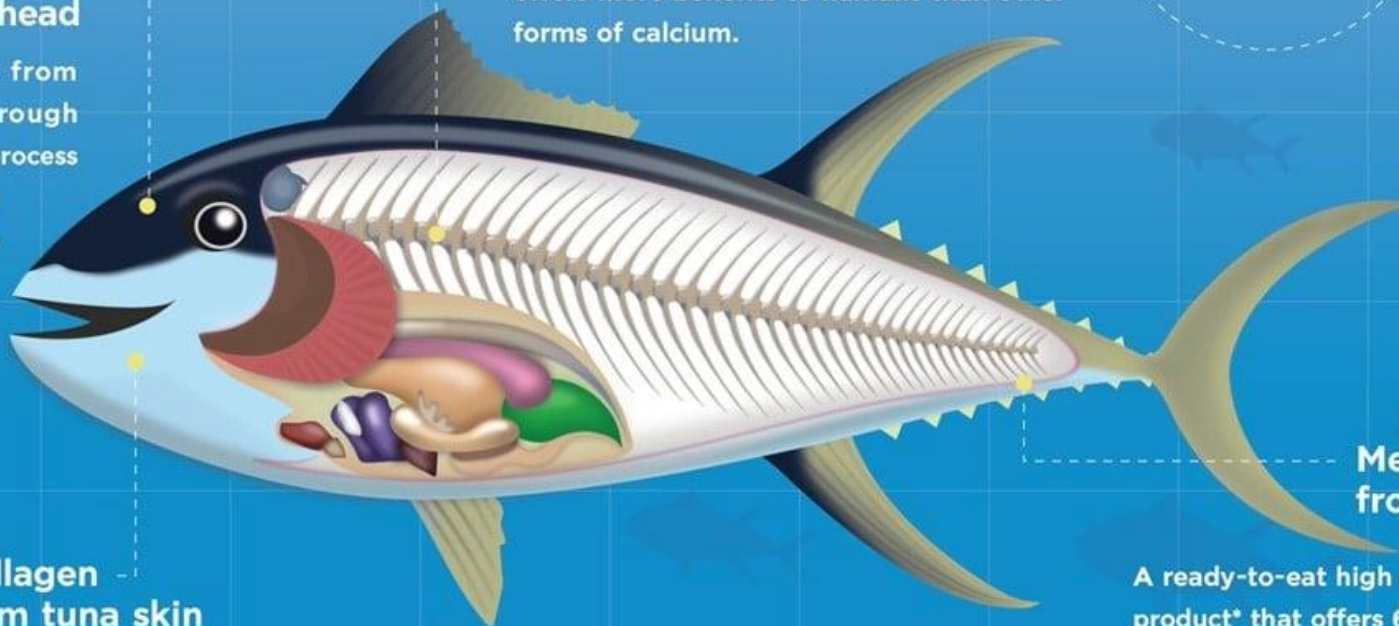
Calcium from tuna bone

Calcium from tuna bone frame is the same form of calcium found in human bone and offers more benefits to humans than other forms of calcium.



Peptides from tuna dark meat

Bio-Active Peptides increases body absorption through the natural digestive process.



Collagen from tuna skin

Extraction and application of collagen to isolate specialized functionality from collagen sources in the form of bio-active collagen peptides.

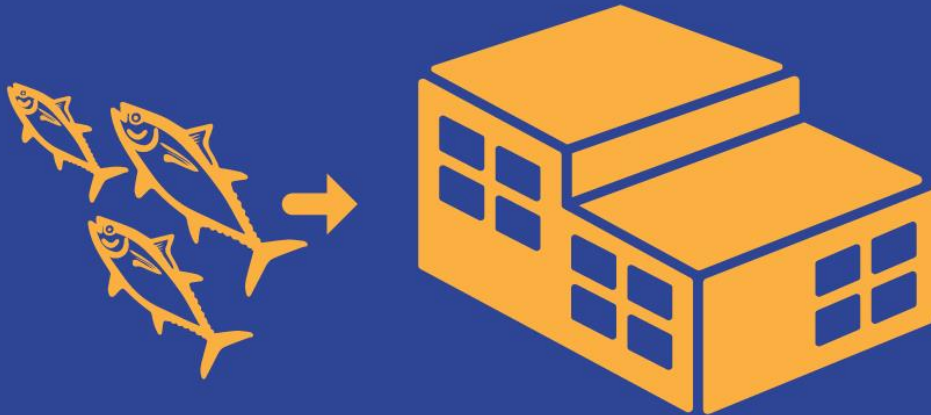
Medical foods from tuna white meat

A ready-to-eat high protein Surimi based tuna product* that offers 60% less sodium and low in phosphorus and potassium, which is ideal for patients with chronic kidney disease.

*patent-pending



MOVING TOWARDS ZERO FOOD WASTE TUNA PRODUCTION



CANNED TUNA



TUNA LOINS



PET FOOD

50%

45% TUNA CO-PRODUCTS



HIGH-IN-DHA
TUNA OIL
Heads



FISH MEAL
Gills Skin
Bones Viscera

≈ 5%

DEVELOPING SOLUTIONS
TO SCRUB WASTEWATER

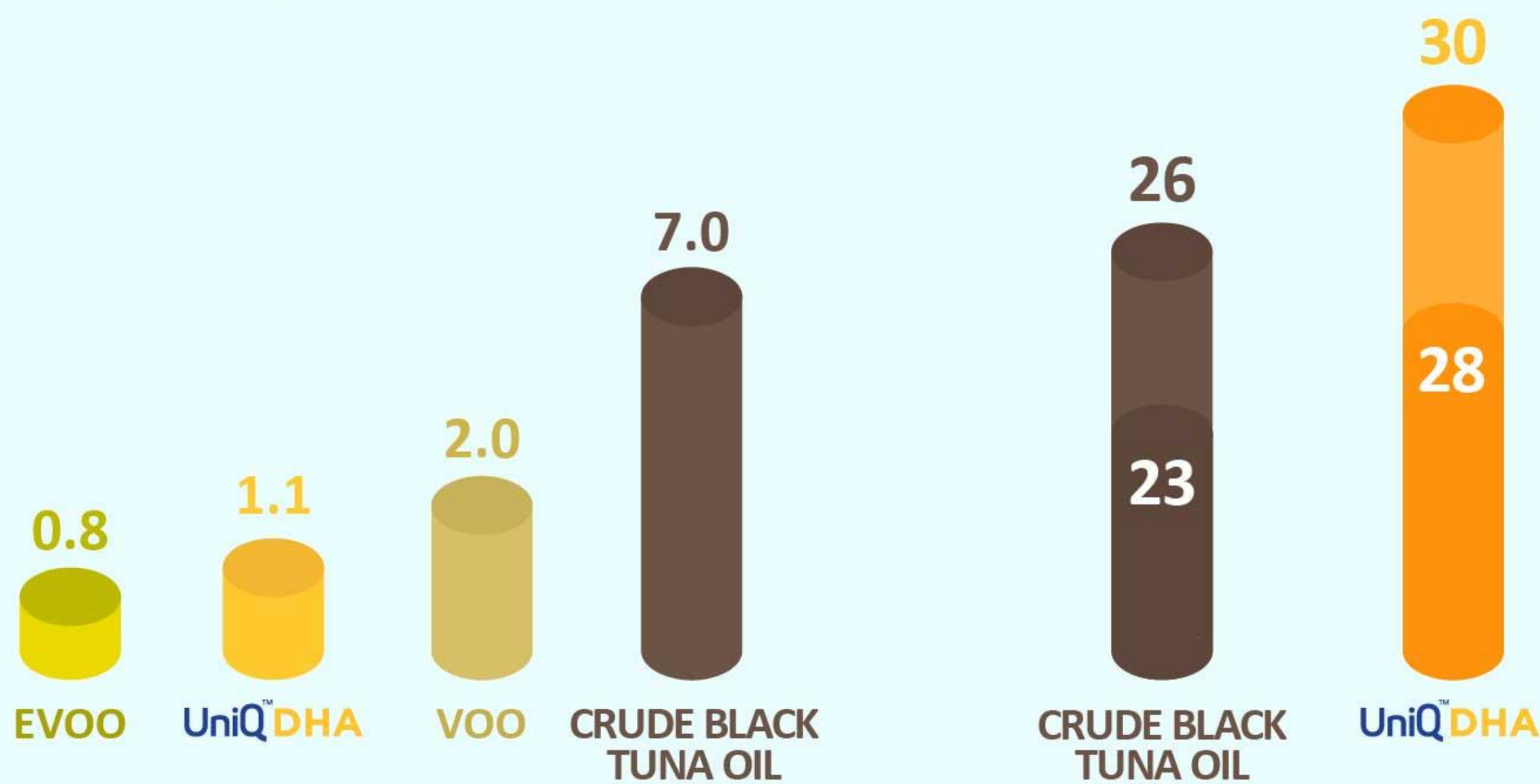
UniQ™ DHA

Not all tuna oil is so UniQ

Only a light touch of processing to preserve the original state of quality, just like the process of extra virgin olive oil.

Free fatty acid (%)

DHA (% total fatty acid)



16%
more DHA
than in crude
black tuna oil

Unlike other manufacturers, we as a leading tuna processor own our raw materials

Selected fresh raw materials, rich in DHA and low in contaminants, delivered straight from tuna processing plants

Passing through **low temperature extraction** to get the highest crude oil quality

High quality crude oil requires only **minimal processing** to obtain high quality refined oil

Less chemical and energy consumption, and less waste generation

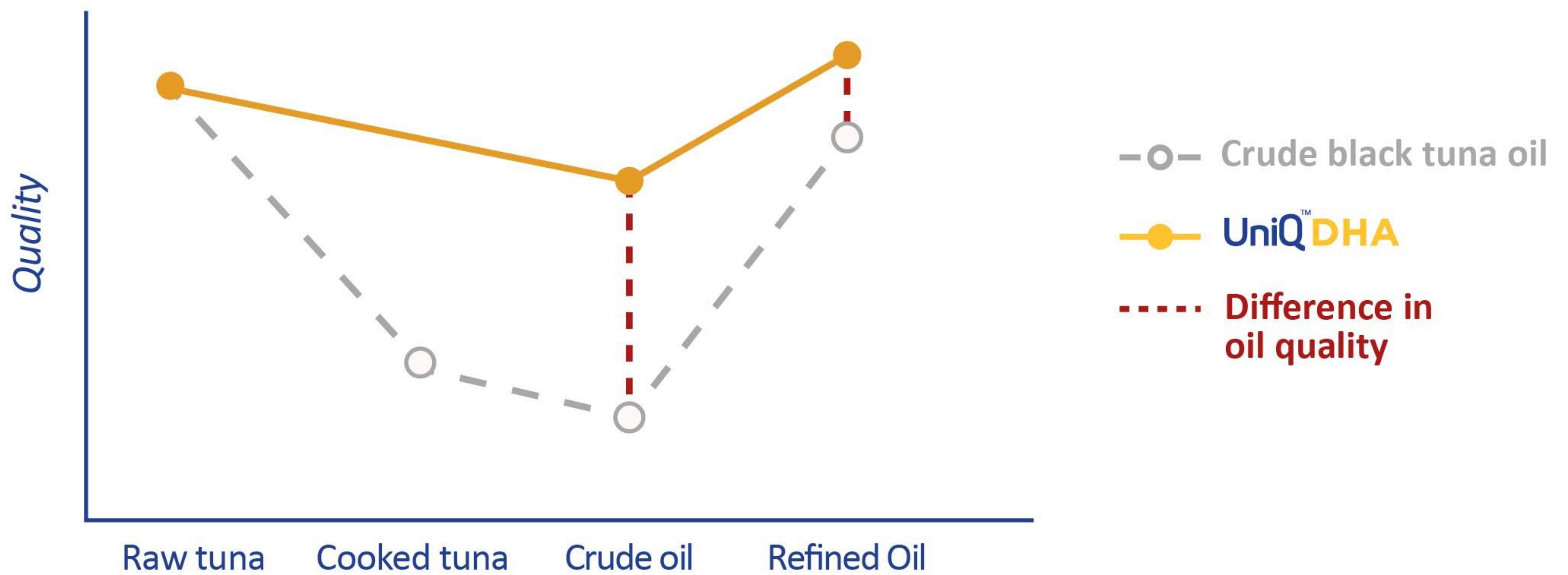
Head Office
979/98, 30th Floor, S.M. Tower,
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Extraction Plant
30/24 Moo 8, Rama 2 Road, Tambon
Tha Sai Mueang Samut Sakhon District,
Samut Sakhon 74000, Thailand

Refinery
Thai Union Marine Nutrients GmbH
Hansestrasse 12a, 18182 Bentwisch
Germany

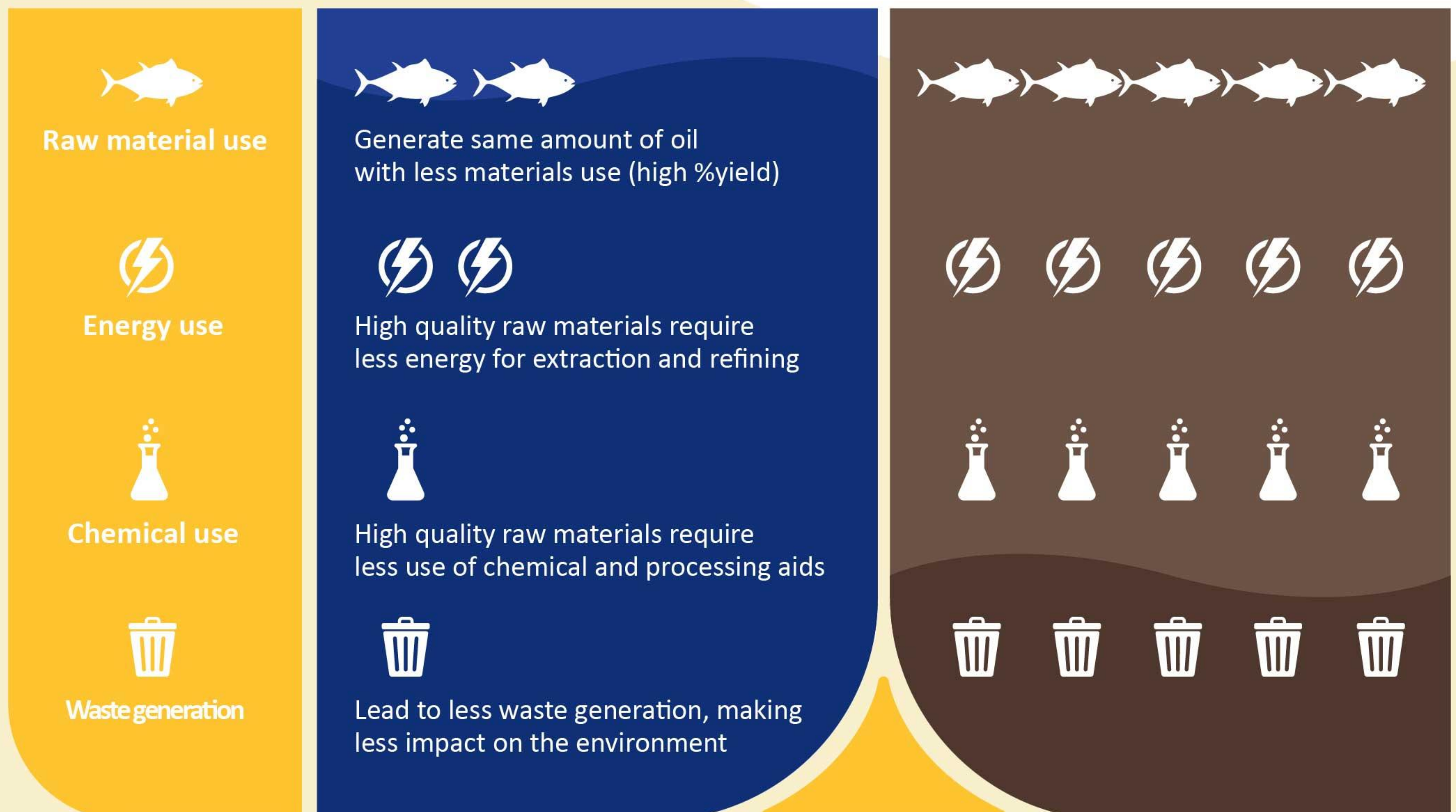
Reference
Trade Standard Applying to Olive Oils and Olive Pomace Oils, COI/T.15/NC No 3/Rev. 15, November 2019, International Olive Council.

Since UniQTM DHA uses high quality raw materials, it requires minimal processing with less energy and chemical use to generate high quality oil



UniQTM DHA

CRUDE BLACK TUNA OIL



UniQTM DHA

From Dock to Door



- Sustainable and transparent raw material sourcing guided by **SEACHANGE programs**
- Good practice on raw material handling from catching through to manufacturing

- **Fresh co-products from Thai Union's factories** in Thailand, Seychelles and Ghana are collected and supplied straight to Thai Union Ingredients's oil extraction plants

- Passing through a **low temperature extraction process** preserving natural functionality by minimizing oxidation level and obtaining the **highest DHA content in the market at 28% to 30%**

- The high quality crude oil is delivered to **Rostock, Germany for refining**
- **State-of-the-art technology** meeting highest standard for infant formula and pharmaceutical products.

- **Full traceability** with sustainable and transparent supply chain
- Preserve natural functionality using high quality raw materials and gentle processing
- Various applications in **infant formula, functional foods and dietary supplements**

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<https://seachangesustainability.org>

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