EUROSENSE, Verona 2-5 September.

MØREFORSKING

Sensory vocabulary for marine omega-3 oils

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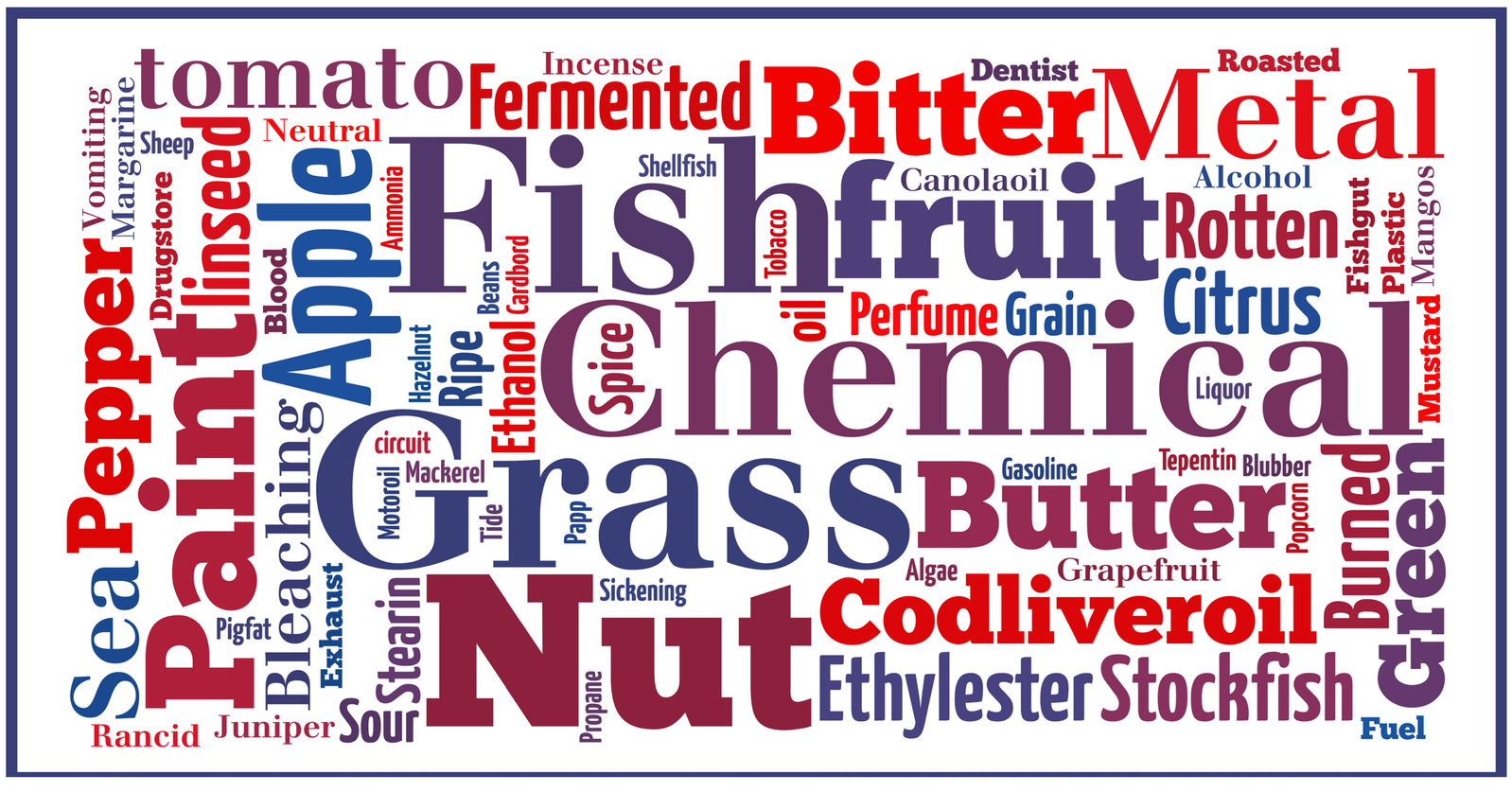
Global health organisations recommends **500 mg omega-3 per day.** Fish and fish oils are the best sources of omega-3. If sufficient consumption of fish is challenging, a supplement of fish oil is recommended.

Even though the Omega-3 industry has strict restrictions concerning the chemical quality of marine oil, they lack a defined sensory methodology and a vocabulary. The Norwegian industry, responsible for **20 % of the global export** of omega-3 concentrates, has taken the initiative to study the most important sensory descriptors of marine oils with the aim to set up a common sensory quality standard and a **flavour guarantee** on their products.

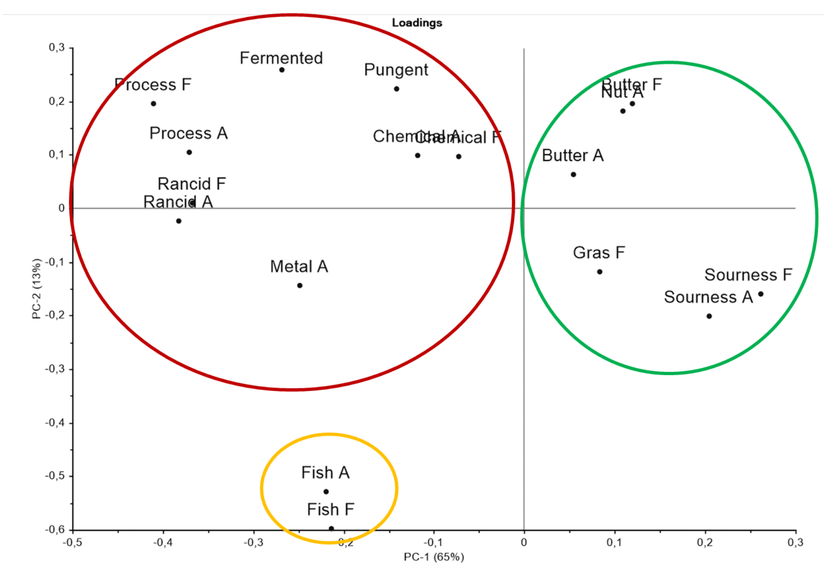
Oil-samples from eight of the largest producers of omega-3 products in Norway has been collected for **sensory and chemically analysis** and the objective has been to classify the different types of oil **based on** their **sensory quality**. Earlier a sensory wheel based on 60 selected descriptors grouped together in 21 categories was developed to give a systematic presentation of the sensory vocabulary.

Acknowledgement

This work is a part of the project «Qomega-Sensory quality on omega-3 oils» funded by The Norwegian Seafood Research Fund. The work has been conducted in cooperation with nine marine oil producers: Marine Ingredient AS, Berg LipidTech AS, Orkla Health AS, Epax Norway AS, GC Rieber Oils AS, Pharma Marine AS, Vesteraalens AS, Nordic Pharma AS and Calanus AS. In addition Technical university of Denmark (DTU), Global organizations for EPA and DHA (GOED), Blue Leagsea and Biotech North has contributed.



Results show a **positive correlation** between primary and secondary oxidation products and sensory properties such as rancidity and fermented flavour and a **negative correlation** between primary oxidation products and sourness.



Characteristics as **sourness, grassy, nutty and butter** is considered as minor deviation and will not reduce the quality the oil in the same extent as characteristics like chemical, process, fermented and rancid. Most of the oils has also a weak **fishy flavour common for the species** and regarded as less serious for the quality.

Relevant quality parameters for different markets are considered. For instance, an oil intended for functional food or children's products (A) will have stricter sensory demands than oils in drinking oil and pharmaceuticals (B & C), while the chemical demands are the same in all segments.

Example of classification.

Parameters	Class A	Class B	Class C
Peroxide value	≤5	≤5	≤5
Anisidin value	≤20	≤20	≤20
Absorbance/colour	?	?	?
Sensory defects	0	<2	<3
Sourness	≥0	>0	-
Fishy	0	≤1	≤2
Rancid	0	≤0,2	≤1

By dividing the oils in to **3 sensory classifications** it will be easier for the industry to **communicate the quality** of their oils to the marked. A classification system could also be useful in their quality control and quality optimization.

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