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MICROALGAL OIL: a sustainable alternative for aquaculture feeds?

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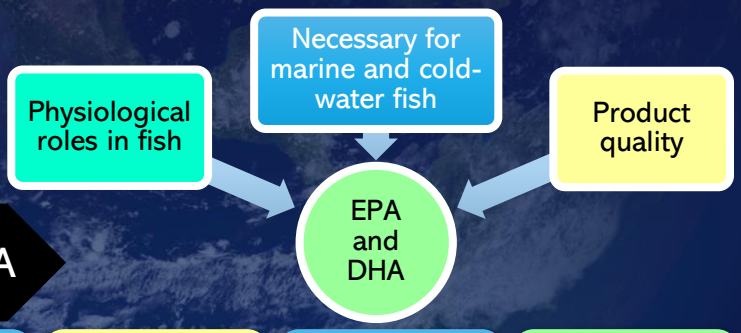
Objectives

- To show the current situation of the aquaculture sector and fish oil consumption.
- To show the alternatives proposed as replacements for fish oil.
- To investigate if microalgae really meet all the requirements to be a sustainable replacement for fish oil.

Importance of EPA and DHA



Alternative sources of EPA and DHA

MICROALGAE as INGREDIENT for FISH FEEDS

Microalgal species and culture methods

- Heterotrophic microalgae: *Schizochytrium* sp., *Crypthecodinium* sp., *Thraustochytrium* sp.
- High lipid content (up to 60%).
- Generally rich in DHA and poor in EPA.
- Heterotrophic culture with C and N sources.

- Photoautotrophic microalgae: *Nannochloropsis* sp., *Phaeodactylum* sp.
- Low lipid content (lower than 20%).
- Generally rich in EPA and poor in DHA
- Open pond/photobioreactor culture.

Microalgal products versus fish oil

Fish health and growth	✓ No negative effects in: *Survival rate*, *Growth performance*, *Feeding efficency*
Fillet quality	✓ No sensorial quality changes ✓ High n-3 levels in the tissue

Conclusions:

- Microalgae have demonstrated to be good replacements for fish oil as a source of EPA and DHA.
- Heterotrophic microalgae such as *Schizochytrium* sp., are easy to cultivate and have a high lipid content with high DHA levels.
- Now the focus is on selecting certain strains in order to improve their EPA content.