Hvordan få fart på kommersiell utnyttelse av marint biråstoff

Hogne Hallaråker

Arctic Nutrition

ARCTIC NUTRITION

Agenda

Viktige drivere for suksess:

“Storytelling”
“Keep it simple”
Markedsarbeid; hva kan du tilby utover vanlig fett og proteiner?
Hvilket marked? (kosttilskudd, kosmetikk, mat, farmasi?)
Hvor? (USA, EU, Asia, Sør-Amerika, Afrika?)
Etablert nettverk og kontakter i markedet
Miljøprofil og kunnskap

1) **Identifisere første sluttprodukt**
2) **Tilgang på stabilt råstoff**
3) **Beherske prosessteknologi**
4) **Kontroll på verdikjeden (råstoff, analyser, produksjon, pakking, logistikk, marked)**
5) **Finne partnere**
6) **Starte salgsarbeidet**

M – Marine
O – Omega-3
P – Phospholipid
L ™

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Hva har Arctic Nutrition gjort?

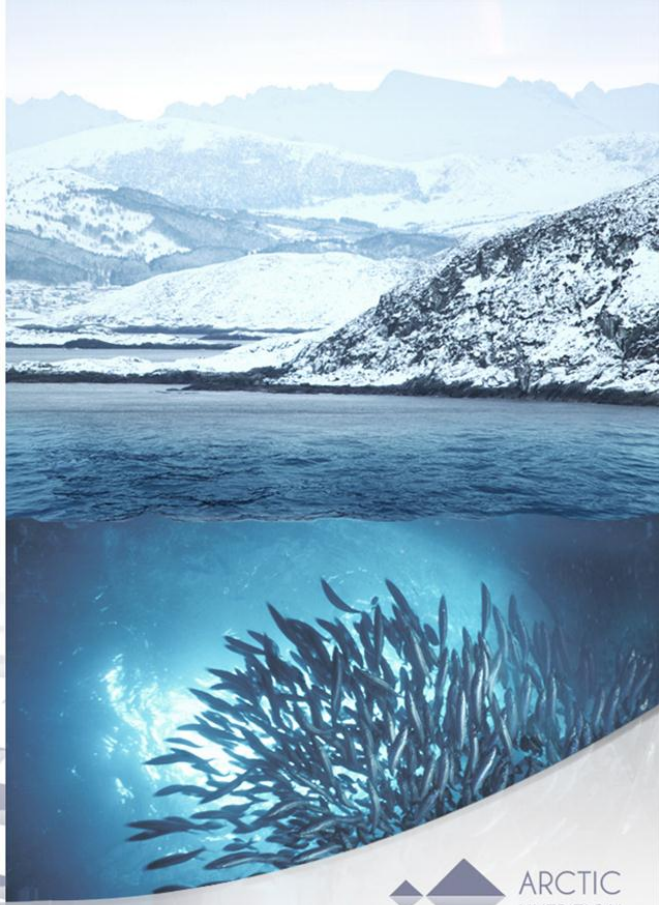
Herring caviar Marine Omega-3 PhosphoLipids (MOPL™)

Business focused

Arctic Nutrition's business idea

Arctic Nutrition is a Norwegian biotechnology company that develops and markets premium marine ingredients based on Norwegian spring spawning herring caviar extracts for use in:

- Dietary supplements
- Cosmeceuticals
- Fortified foods
- Pharmaceutical



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Ownership and management

Management team has extensive experience in commercializing lipids

- Investment group has track record from commercializing Tonalin, CLA through Natural ASA
- Management team has extensive background in recognizing, developing and marketing lipids from Natural ASA, EPAX AS, Cargill, Nestle and Aker Biomarine ASA

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Business opportunity

Capitalizing on novel opportunities in the Omega-3 market

The market for Marine Omega-3 Phospholipids is strong and growing

Arctic Nutrition is uniquely positioned

1. Cost efficient raw material
2. Integrated value chain through strategic partnerships
   - Herring caviar
   - Technology
3. Branding
4. Product range
   - MOPL™ content
   - Pure protein fractions

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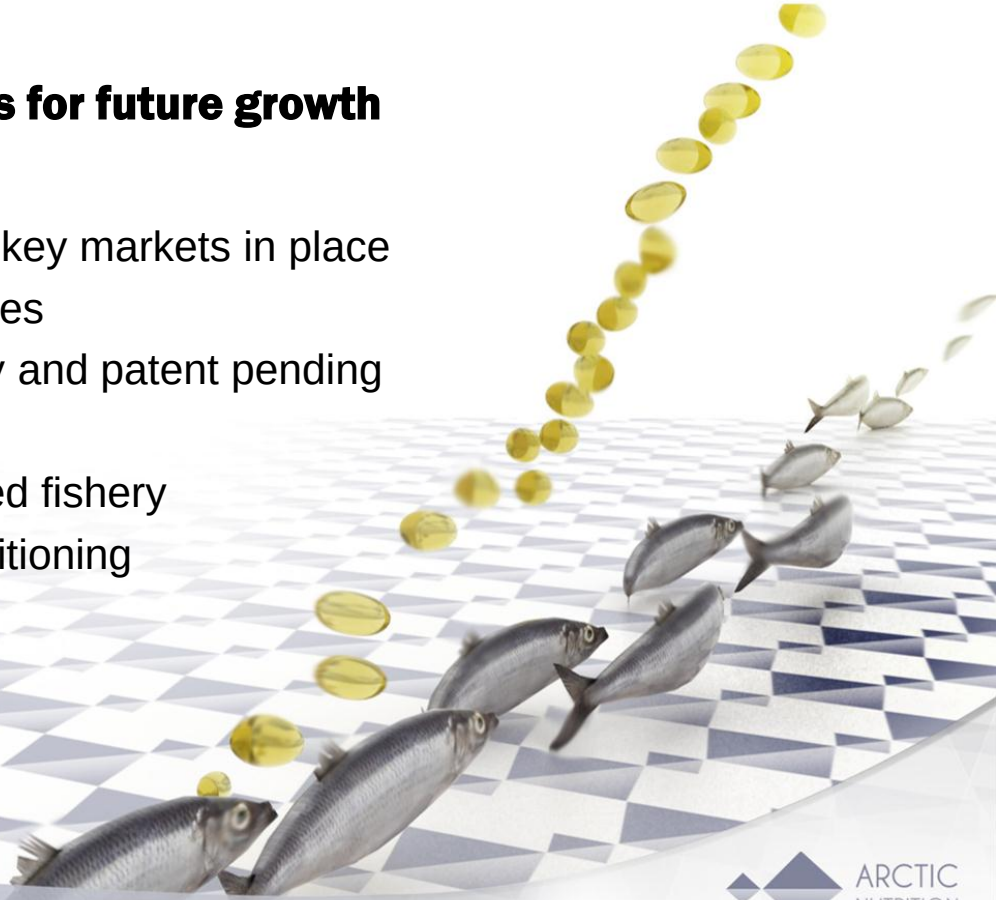
Execution
Attractive fundamentals for future growth

- Distribution partners in key markets in place
- Attractive product profiles
- Technology; proprietary and patent pending
- Raw material secured
- Sustainable and certified fishery
- Market growth and positioning
- Clinical studies;
  - Current
  - Future



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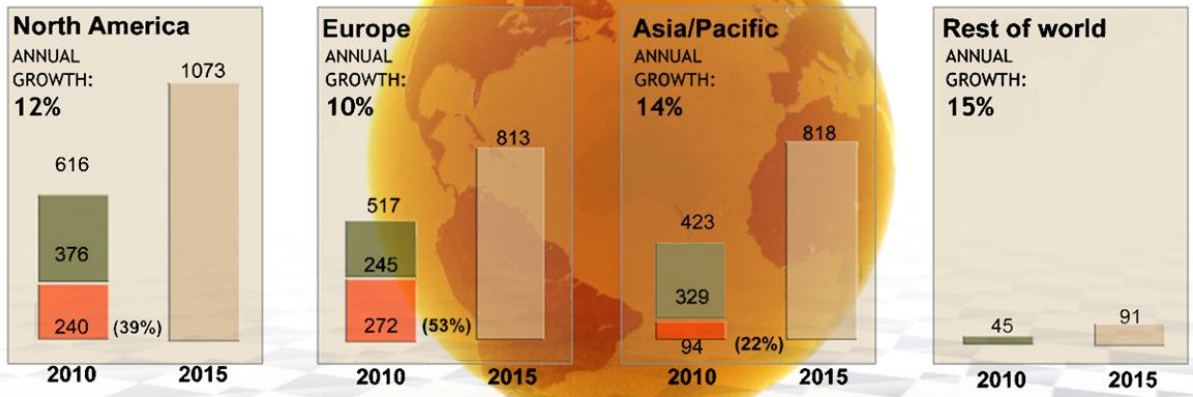
Industry outlook

Omega-3 2010: USD 1.6bn industry - expected to grow on average 12%



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Global marine oil omega-3 market value forecast, USD millions

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MOPL™ acceleration

The market and drivers of Marine Omega-3 Phospholipids

- Marine ingredients market exhibits double digit growth
  - Omega-3 concentrates are entering the commodity stage
    - Need for Omega-3 products that goes beyond highly concentrated fish oils
    - Marin Omega-3 phospholipids (MOPL™) are third generation product
    - Key drivers for accelerated growth
      - Anti-inflammatory properties
      - Brain health and cognitive performance
      - Gut health
      - Krill oil is experiencing good growth based on marine Omega-3 Phospholipids pitch
      - High DHA trend

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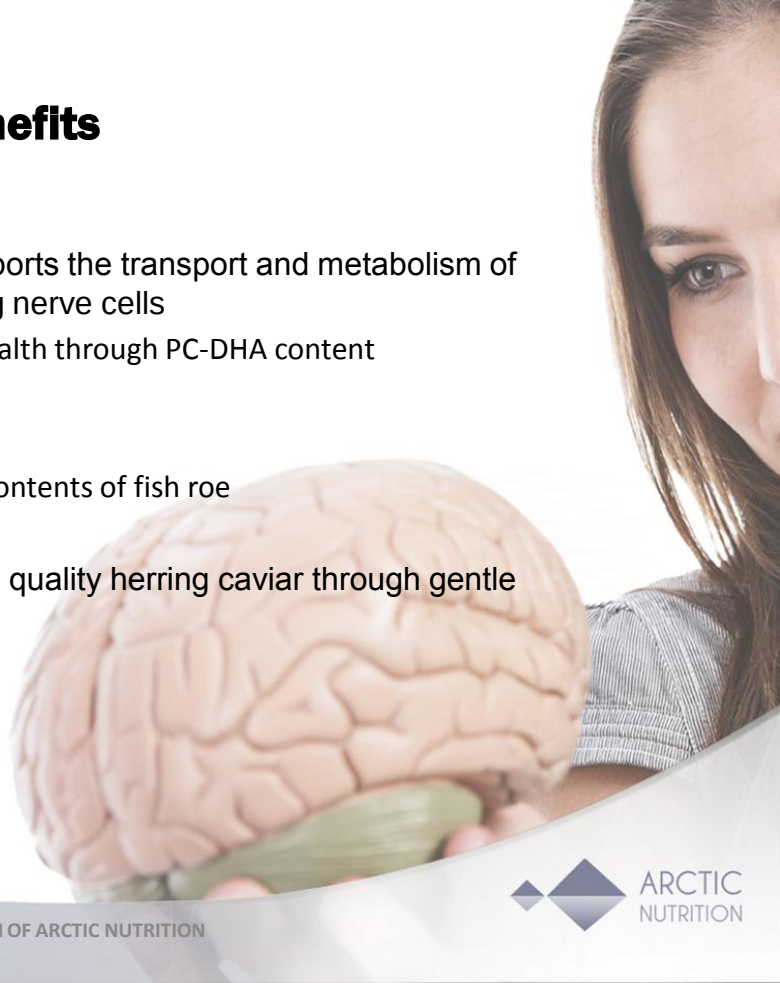
MOPL™ and health

The product MOPL™ and health benefits



- MOPL™ is an essential structural fat that supports the transport and metabolism of nutrients through all cell membranes, including nerve cells
  - Improves cognitive performance and brain health through PC-DHA content
  - Improves skin health
  - Improves overall health and well being
  - Excellent composition based on the original contents of fish roe

- Arctic Nutrition MOPL™ is extracted from high quality herring caviar through gentle processing
  - Stable raw material composition
  - Unique end product quality
    - Technical
    - Nutritional

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GO MOPL

- **Title of study**: Traitement du psoriasis par la lécithine marine
- **First author** Dupont P
- **Journal citation**: Phytothérapie 1: 15, 2006
- **Study design**: Subjects were thirty male and female patients aged 12-66, with all types of psoriasis (plaque, inverse, guttate, erythodermic, scalp, pustular), and lesions evolved for ten years average. Subjects consumed 400 mg of marine phospholipids (MPL; 45% PC, 29% PE, 16% PI, 5% PS, 5% sphingomyelin) by mouth, in two capsules per day, for 4-6 months, in a non-blinded, non-placebo controlled, pilot study. N-3 PUFA were mainly contained in phospholipids, with a ratio of n3 DPA:EPA:DHA of 1:2:4. All other treatments were stopped during the study. Results were evaluated by Psoriasis Area and Severity Index (PASI) score and photography.
- **Results**: PASI scores were reduced from 19.1 to 10.43 to 3.36 to 0.5 at 0, 2, 4, and 6 months, respectively. Lesion improvement was seen in 46, 83, and 98% of lesions, at 2, 4, and 6 months, respectively. Photography revealed striking improvements in psoriatic lesions (next slides).
- **Conclusion and significance**: consumption of dietary supplements containing MPLs, led to clinically-meaningful regression of psoriatic lesions in 2-3 months and healing in 4-6 months.
- **Relevance to AN:** AN produces unique marine omega 3 phospholipids (MOPLs). Similar to results reported in this study, MOPLs are expected to improve psoriasis.

Traitement du psoriasis par la lécithine marine. Dupont P; Phytothérapie 1: 15, 2006

GO MOPL

Trunk: before treatment

Trunk: after MPL treatment

Elbow: before treatment

Elbow: after MPL treatment

Men and women aged 12-66, with various types of psoriasis, consumed 400 mg MPL/day in two 200 mg doses, for 2-6 months (see previous slide for study details)

- **Title of book**: Comment se libérer du psoriasis par des méthodes naturelles
- **First author** Dupont P
- **Book citation**: édition nutraceutique, 2008, ISBN-13: 978-2953154504
- **Summary**: The dermatologist Paul Dupont treats his patients with marine phospholipids (MPL). He observes striking improvements in his patient's psoriasis, as shown photographically, for a knee, before and after MPL treatment (on-line extract of the book, entitled, "Mise au point: comment traiter le psoriasis par la lécithine marine)

MOPL™ – Highlights

- Third generation omega 3 product:
  - Dispersible in water and oil
    - Wider range of applications
  - Rich in Omega-3 fatty acids, particularly DHA
  - MOPL™ bioavailability
  - Herring caviar raw material classified as food
  - Only minor variations in composition compared to other raw materials
  - High natural resistance against oxidation
  - Sustainable resource (MSC certified)

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MOPL™ - Reference table

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Integrated value chain

Strategic partnerships secure raw material supply

- Strategic partnerships secure:
  - Raw material supply
  - Processing and analysis
  - Logistics
  - Herring caviar pre-extraction processing equipment
  - QA/QC resources
  - Product development lab

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Sustainable and well managed raw material source

Secure supply of Norwegian spring spawning herring caviar

- Large and sustainable supply for the last 10 years
- Fishery certified by the Marine Stewardship Council (MSC)
- Spawning grounds situated next to Fosnavaag Seafood´s production facilities
- Herring classified as “Species of least concern” by IUCN (International Union for Conservation of Nature)
- Additional volume of herring roe can be obtained

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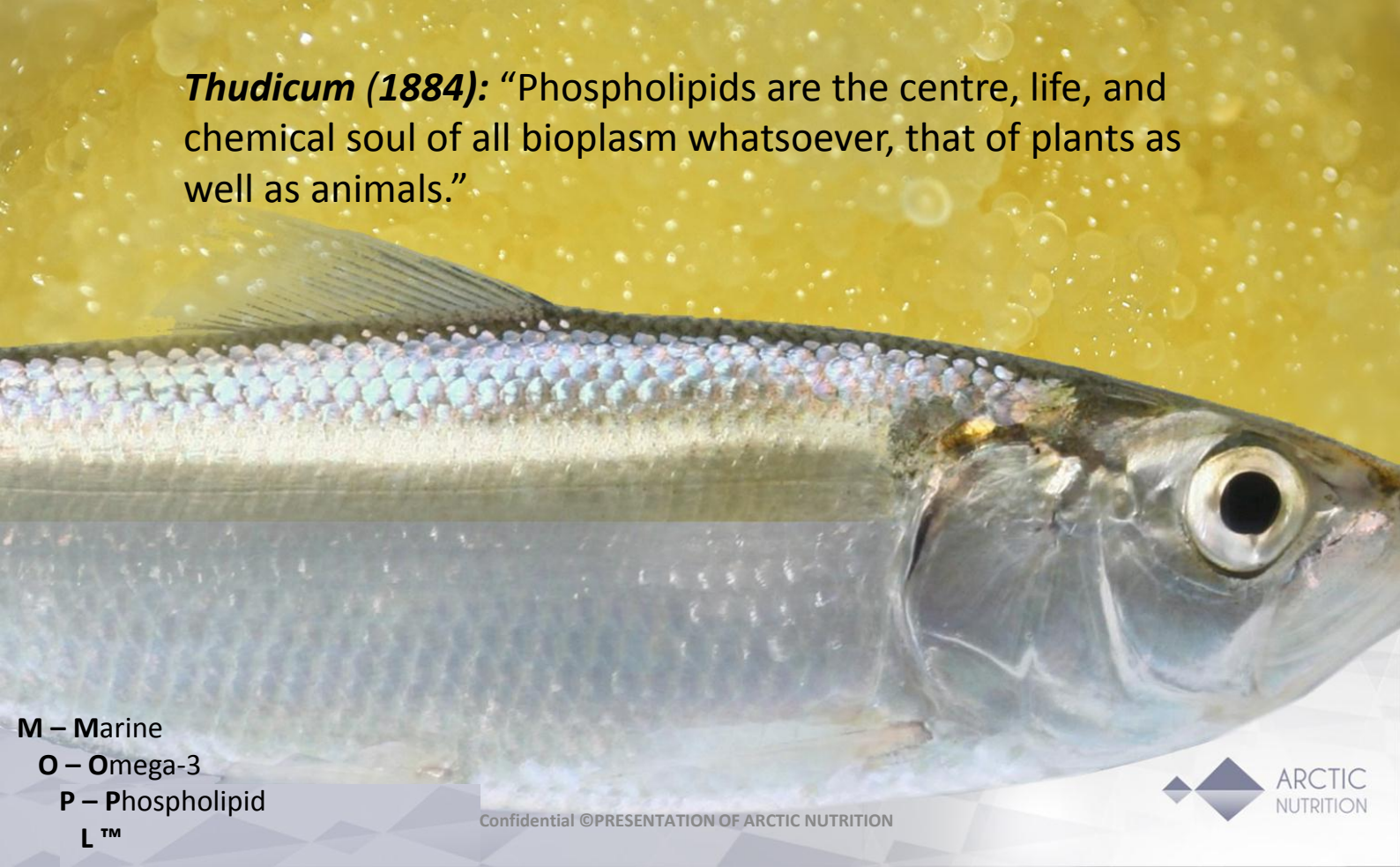
Thudicum (1884): "Phospholipids are the centre, life, and chemical soul of all bioplasm whatsoever, that of plants as well as animals."



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