

Arctic Bioscience AS HeROPA study HRO350 in mild-to-moderate psoriasis

Data read-out July 2025

EU CT number: 2022-501850-12-00 EudraCT number: 2021-003684-96 ClinicalTrials.gov ID: NCT06125808



Foundation for commercial discussions established, subgroups show statistical significance

Key findings

- Primary endpoint PASI50 difficult to reach due high placebo rate; endpoint sensitive to disease fluctuations (as reported in October 2024)
- Stricter endpoints like PGA 0/1 on per protocol population approaching significance (p = 0.07)
- Relevant subgroups show statistical significance (p < 0.05)
- Robust safety data with no serious concerns observed in the period and HRO350 is well tolerated by the patients
- Combination of statistical significance in subgroups, responder analysis and robust safety data as base for planning future phase III and clinical development
- Promising results going into further partner discussion this fall

RO350 is well tolerated by the patients d robust safety data as base for planning

Primary endpoint PASI50 difficult to measure in mild population

Natural disease fluctuations and limited precision on lower end of PASI scale makes it hard to show differences in PASI50 between groups for patients with mild-to-moderate psoriasis



patient with PASI 30 at baseline achieving PASI50 (biologics trial) PASI50: The proportion of patients with \geq 50% reduction in Psoriasis Area and Severity Index (PASI, scale from 0-72) from baseline. PP: Per Protocol Population for PASI. Week 52 n = 273. Data as observed. ITT: Intention to treat. N = 521, data not shown. p = 0.472 high dose, p = 0.626 low do 1) Papp KA et al., Dermatol Ther (Heidelb) (2021) 11:1079-1083. https://doi.org/10.1007/s13555-021-00572-2

variation and episodes of spontaneous remission or worsening, versus a severe

Comments

- **PASI50** compared between HRO350 and placebo at 6 months was the primary endpoint, which was not met
- Efficacy of HRO350 observed as assumed in protocol for patients who completed 1 year of treatment
- Placebo response-rate was much higher than predicted
- **PASI scale** has less precision in mild disease¹

Stricter endpoint differentiates better: PGA 0/1 (clear or almost clear)

Key secondary endpoint: Physician's Global Assessment (PGA 0/1) is easier to measure and more difficult to achieve



PP: Per Protocol population for sPGA for patients who completed 52 weeks: n = 272. Data as observed. ITT: Intention to Treat population for sPGA: N = 521.

(Non-Responder Imputation analysis not shown. p = 0.490 for high dose vs placebo and p = 0.608 for low dose vs placebo)

Static PGA (sPGA) measures physician's impression at a single time point. Static form is standard due to reliability

1. Tveit KS et al. Long Term Efficacy and Safety of Herring Roe Oil in the Treatment of Psoriasis, a 39-week Open-label Extension Study. International Journal of Clinical and Experimental Medical Sciences. Vol. 7, No. 1, 2021, pp. 13-20. doi: 10.11648/j.ijcems.20210701.13. 2) 3) Stein Gold L, et al. Efficacy and safety of aprecipatients with mild-to-moderate plaque psoriasis: Results of a phase 3, multicenter, randomized, double-blind, placebo-controlled trial. J Am Acad Dermatol. 2022 Jan;86(1):77-85. doi: 10.1016/j.jaad.2021.07.040. PMID: 34343599.

- Nearly half of patients treated with HRO350 achieved clear-or-almost clear skin after 52 weeks
- PGA 0/1 is a much harder endpoint to reach than PASI50
- 47% of patients in the high dose arm achieved a PGA 0/1 at week 52, versus 34% in the placebo group (p = 0.073)
- In the previous Haukeland study¹ 40% of patients achieved PGA 0/1
 - All patients had PGA scores ≥ 2 and ≤ 4 at inclusion

Higher placebo rate in patients with milder disease at baseline

Subanalysis identified differentiators on placebo response: Baseline severity



Post-hoc analysis on the Per Protocol (PP) Population for sPGA. Week 52 n=272. Data as observed. ITT: Intention to treat. N = 521 all time points. (Non-Responder Imputation analysis not shown. p = 0.490, p = 0.995, and p = 0.391 for high dose vs placebo)

Static PGA measures physician's impression at a single time point. Static form is standard due to reliability.

Comments

- Post-hoc analysis: Placebo response is higher in patients with PASI < 6 at baseline
- Patients with $PASI \ge 6$ and < 6respond similarly in the high dose arm

Lower placebo rate in patients \geq 50 years

Subanalysis identified statistically significant subgroup: Impact of age



Post-hoc analysis on the Per Protocol (PP) Population for sPGA. Week 52 n = 272. Data as observed. ITT: Intention to treat. N = 521 all time points (Non-Responder Imputation analysis not shown. p = 0.490, p = 0.254, and p = 0.946 for high dose vs placebo) Static PGA measures physician's impression at a single time point. Static form is standard due to reliability

Comments

- Post-hoc analysis: Lower placebo rates ≥ median age (\geq 50 years)
- Younger age with shorter duration of psoriatic disease may increase chance of spontaneous improvement in the placebo group
- Patients of all ages respond similarly in the high dose arm

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Higher response rates in active arm for patients with weight \leq 98 kgs

Subanalysis identified statistically significant subgroup: Impact of weight



Post-hoc analysis on the Per Protocol (PP) Population for sPGA. Week 52 n = 272. Data as observed. ITT: Intention to treat. N = 521 all time points. (Non-Responder Imputation analysis not shown. p = 0.490, p = 0.469, and p = 0.868 for high dose vs placebo). Missing weight: n = 2 PBO Static PGA measures physician's impression at a single time point. Static form is standard due to reliability

Comments

Post-hoc analysis showed that more patients in lower three weight quartiles (patients weighing \leq 98 kgs) in PP achieved a PGA 0/1 at week 52 than patients in the highest weight quartile

Robust safety on HRO350

Well tolerated with no serious safety concerns

HRO350 safety from HeROPA patients (N = 521) treated for up to 1 year

No Serious Safety Concerns

No drug-related Serious Adverse Events (SAEs) or Suspected Unexpected Serious Adverse Reactions (SUSARs) were reported

Independent Oversight Confirmed Safety

Periodic reviews by the independent Data Monitoring Committee (DMC) raised no safety concerns throughout the trial

Well Tolerated Over 1 Year

HRO350 demonstrates a favorable safety profile throughout 12 months of treatment and 2 months post-treatment follow-up Few drug-related adverse events (AEs) and low drop-outs due to drug-related AEs Adverse events observed were consistent with expectations and those seen in the Haukeland study

Regulatory-Ready Documentation

Full safety data analysis, including frequency tables and SAE narratives will be detailed in the Clinical Study Report



Plan going forward

- Nutra business is growing strongly (~30 % annually) ٠
- We strongly believe there is a major market potential for HRO350 in mild-to-moderate psoriasis •
- Arctic Bioscience will seek partnerships for further development of HRO350 with a potential Phase III clinical program ٠





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Appendix



HRO350 in mild-to-moderate psoriasis Market and value proposition



HRO350 Strategic Positioning: mild-to-moderate psoriasis

~18.7M mild-to-moderate patients in the U.S. and EU5

- ~22.5M total psoriasis patients across severity types (~10.7 U.S. and ~11.8 EU5)
- ~80% of U.S. patients and ~90% of EU5 patients have **mild-to-moderate** psoriasis
- HRO350 is targeting a total addressable market of ~18.7M mild-to-moderate psoriasis patients





In the U.S.,

In the EU5,



*Split between mild and moderate patients varies in the literature.

Sources: HRO350 Commercial Opportunity Assessment in Psoriasis, IQVIA; WHO Global Report on Psoriasis; Rendon. Int J Mol Sci. 2019 Mar; 20(6): 1475; UpToDate; American Academy of Dermatology Association; Papp. Dermatol Ther. 11:1053; 2021; National Psoriasis; Foundation; Evaluate Pharma 2022 Psoriasis Market Size, November 2022 Analysis.

Paediatric indication for HRO350: upside potential

Potential first-line treatment for children with mild-to-moderate psoriasis

Paediatric Investigation Plan (PIP) agreed with the Paedatric Committee* of the EMA

- Drug development program for children <18 years of age with psoriasis
- Component of the regulatory drug development journey for HRO350
- Prerequisite for filing for marketing authorization (MA) for new medicines in Europe

- 1% of children under age 18 suffer from psoriasis
- Plan for expanded indication for HRO350
- •
- US



*The Paediatric Committee of the EMA provides opinions on the quality, safety and efficacy of a medicine for use in the paediatric population

References: Augustin M, Glaeske G, Radtke MA, Christophers E, Reich K, Schäfer I. Epidemiology and comorbidity of psoriasis in children. Br J Dermatol. 2010 Mar;162(3):633-6. doi: 10.1111/j.1365-2133.2009.09593.x. Epub 2009 Nov 18. PMID: 19922529; Haulrig MB, Zachariae C, Skov L. Off-Label Treatments for Pediatric Psoriasis: Lessons for the Clinic. Psoriasis (Auckl). 2021 Feb 11;11:1-20. doi: 10.2147/PTT.S268462. PMID: 33604269; PMCID: PMC7886293.; Menter A, Cordoro KM, Davis DMR, et al. Joint American Academy of Dermatology-National Psoriasis Foundation guidelines of care for the management and treatment of psoriasis in pediatric patients [published correction appears in J Am Acad Dermatol. 2020 Mar;82(3):574]. J Am Acad Dermatol. 2020;82(1):161-201



Limited approved products in standards of care High unmet medical need

• A future paediatric indication would increase patient population who could have benefit from HRO350

Limited treatment options – potential first line treatment for mild-tomoderate psoriasis in children

Unmet need for oral treatments – only apremilast currently in clinical trials for mild-to-moderate pediatric psoriasis (> 6 yrs) in the

HRO350 could meet an unmet medical need for patients with non-severe psoriasis



PASI: Psoriasis Area and Severity Index (0-72 point scale where >10 is moderate-to-severe and severe disease) Source: HRO350 Commercial Opportunity Assessment in Psoriasis, IQVIA report *Oral (e.g. fumarates, methotrexate, apremilast) ** Injectables (e-g-. adalimumab, ustekinumab, ixkizumab)

Properties of drug candidate HRO350

Oral (soft capsules)

- **ce** First-in-class active pharmaceutical ingredient (API)
- Mild-to-moderate disease

Few treatment options for non-severe disease

Heropa study Hro350 in mild-to-moderate psoriasis

Study design



HeROPA Phase IIb clinical trial design

Large phase IIb study investigated efficacy, safety, and dose of HRO350 versus placebo

- Included **521 patients** started late January 2023 in the UK and March 2023 in Germany, Poland, Finland and Norway ٠
- Protocol designed based on Scientific Advice from the EMA ullet



PASI: Psoriasis Area and Severity Index (0-72-point scale where < 10 is mild-moderate disease); RCT: Randomized Controlled Trial. U CT number: 2022-501850-12-00 EudraCT number: 2021-003684-96

b.d. = twice daily; iii = three capsules; DDD = defined daily dose

eek 26		Secondary Endpoints at week 52 Including Change in PASI				
	Period B : RCT (week 26-52)			Follow-up (week 52-60)		
	HRO350 2100 mg DD per oral iii b.d.	D		No treatment		
	HRO350 1050 mg DD	D		No treatment		
	per oral iii b.d.			No treatment		
Placebo				No troatmont		
	per oral iii b.d.			No treatment		
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HRO350 is a first in class asset with phospholipid esters as API

HRO350 is a unique lipid matrix with biologically active phospholipids

Proprietary lipid extract of phospholipid esters from **herring roe** (Clupea harengus)

Manufactured according to GMP

Cellular data on API and immunomodulation¹⁻³

Active substance (API):

PEHeRo (Phospholipid Esters from Herring Roe) IRIS Substance ID: 30000046327 EV Medicinal Product Code: PRD9919073 Core structure of phospholipid esters from herring roe A

Example phospholipid: PC(22:6n3/16:0



API: Active Product Ingredient; GMP: Good Manufacturing Practice

References: 1) Forskningsradet (Research Council of Norway), Properties of phospholipids d Herring Roe in Psoriasis, available online 2) Ringheim-Bakka, TA et al. Herring roe PLs promote SPM biosynthesis in macrophages and a keratinocyte/fibroblast co-culture as model of psoriasis, PREPRINT, bioRxiv 2025.02.20.639253; doi: https://doi.org/10.1101/2025.02.20.639253; A et al. Herring roe PLs promote SPM biosynthesis in macrophages and a keratinocyte/fibroblast co-culture as model of psoriasis, PREPRINT, bioRxiv 2025.02.20.639253; doi: https://doi.org/10.1101/2025.02.20.639253; A et al. Herring roe of exerts anti-psoriatic and immunomodulatory effects on the IL-17/23 signaling axis in macrophages, T-cells and a keratinocyte and fibroblast co-culture, PREPRINT, bioRxiv 2025.04.22.650092; doi: https://doi.org/10.1101/2025.02.20.639253. A et al. Herring roe of exerts anti-psoriatic and immunomodulatory effects on the IL-17/23 signaling axis in macrophages, T-cells and a keratinocyte and fibroblast co-culture, PREPRINT, bioRxiv 2025.04.22.650092; doi: https://doi.org/10.1101/2025.04.22.650092.





HRO350 Mode of action & resolution of inflammation



Resolve - not block - inflammation: a therapeutic frontier

HRO350 API (PEHeRo) promotes SPM biosynthesis in immune cells with implications for the treatment of psoriasis

Specialized pro-resolving mediators (SPMs) are a type of bioactive lipids that actively terminate inflammation and drive the restauration of tissue homeostasis

Lipid mediators are **elevated in lesional psoriatic** skin^{3.}

Most existing drugs are designed to reduce inflammation by inhibiting pro-inflammatory cytokines

Data on SPMs supporting an **anti-inflammatory action** of HRO350, and PEHeRo specifically

• upregulating the production of SPMs which promote a shift towards a protective and possibly reparative phenotype of monocyte-derived macrophages



Fullerton, J., Gilroy, D. Resolution of inflammation: a new therapeutic frontier. Nat Rev Drug Discov 15, 551–567 (2016). https://doi.org/10.1038/nrd.2016.39

Park J, Langmead CJ, Riddy DM. New Advances in Targeting the Resolution of Inflammation: Implications for Specialized Pro-Resolving Mediator GPCR Drug Discovery ACS Pharmacol. Transl. Sci. 2020, 3, 1, 88–106 Serhan CN, Chiang N, Dalli J. The resolution code of acute inflammation: Novel pro-resolving lipid mediators in resolution. Seminars in Immunology. 2015 May;27(3):200-215. DOI: 10.1016/j.smim.2015.03.004. PMID: 25857211; PMCID: PMC4515371. Ringheim-Bakka T, Mildenberger J, Dalli J, Saliani A, Petrucelli F, Busygina M, Mancinelli D, Gammelsæter R. Phospholipid Esters from Herring Roe promotes SPM biosynthesis in human monocyte-derived macrophages with implications for the treatment of psoriasis. Poster (37) at the 9th European Workshop on Lipid Mediators, June 26-28th, 2024

HRO350 Clinical development plan



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HRO350 drug development program in psoriasis Updated plan



THANK YOU

Our gratitude to the patients who participated in the HeROPA study

HeROPA investigators and clinics:

Norway:

Haukeland University Hospital Ålesund hospital Stavanger University Hospital Nordlandssykehuset

United Kingdom:

Salford Royal hospital Kiltearn Medical Centre Newquay Health Centre Waterloo Medical Centre Heart of Bath Surgery University Hospitals Dorset Sherbourne Med Centre University Hospital of Durham The practice of health Trowbridge Health Centre St Clare Medical centre **Kingsmill Hospital** Lakeside Medical Research Suffolk Primary Care - Haven Health Breckland Alliance - Grove Surgery Concord Medical Centre Royal Primary Care Ashgate Honiton Surgery Hathaway Medical Centre Rowden Surgery West Walk Surgery **Clarence Medical Centre** Carn to Coast Health Centres

> Finland: **CRST Helsinky Oy** CRST Turku Oy

Germany:

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Poland:

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