

Partner Search Profile

1. Target Horizon Europe Call / Topic

HORIZON-HLTH-2027-02-DISEASE-01-two-stage

Innovative healthcare interventions for non-communicable diseases

2. Research / Cooperation Idea

Challenge / Problem to be Addressed

Chronic non-communicable diseases (NCDs) represent a major and growing health burden, while current interventions often show limited efficacy across heterogeneous patient populations. Chronic oxidative stress, inflammation and metabolic dysregulation are important biological mechanisms associated with disease progression and complications.

There is therefore a need for innovative, safe and well-characterized interventions that can target multiple disease-related mechanisms and provide measurable health benefits.

Deinoxanthin, a carotenoid derived from *Deinococcus radiodurans*, is a promising candidate due to its potential biological activities related to oxidative stress regulation and cellular protection. However, its biological mechanisms, disease intervention potential, standardized production and translational applicability have not yet been sufficiently established.

The proposed project will address these gaps by developing and validating a Deinoxanthin-based healthcare intervention for a selected chronic NCD.

Proposed Research Approach

The project will establish an integrated development pathway from Deinoxanthin production and standardization to biological validation and healthcare application.

First, *D. radiodurans*-derived Deinoxanthin will be produced and comprehensively characterized to establish reproducible quality and composition. Its biological activity will then be investigated using relevant cellular and disease models, focusing on oxidative stress, inflammation, mitochondrial function and metabolic regulation.

Disease-relevant mechanisms and efficacy biomarkers will subsequently be identified and evaluated in appropriate preclinical models to determine efficacy, dose–response relationships, safety and mechanisms of action.

The overall development pathway will be:

D. radiodurans → Deinoxanthin production → standardization → mechanism of action → disease-specific efficacy → biomarker identification → preclinical validation → clinical translation

3. Expertise Offered

Complementarity of MediNResearch and Fraunhofer IME

MediNResearch will contribute expertise in *Deinococcus* biology, Deinoxanthin production and characterization, biological activity, mechanistic studies, omics-based analysis and disease-related biomarker identification.

MediNResearch will take a leading role in establishing Deinoxanthin as the core intervention material, characterizing its biological effects and investigating its potential mechanisms of action in the selected NCD.

Fraunhofer IME will complement these capabilities through its expertise in microbial fermentation, bioprocess development, process optimization, process intensification, downstream processing and scale-up.

IME will support the development of reproducible and scalable production processes and contribute to the standardization and quality consistency of Deinoxanthin.

The complementary roles can therefore be summarized as:

MediNResearch – Biological discovery, efficacy and mechanism

Fraunhofer IME – Bioprocess development, standardization and scale-up

EU clinical/medical partners – Disease-specific validation and clinical translation

Expected Contributions to the Horizon Europe Consortium

MediNResearch will contribute:

- Development and characterization of Deinoxanthin as the core intervention;
- Deinococcus biology and Deinoxanthin production expertise;
- Investigation of oxidative stress, inflammation and metabolic responses;
- Identification of disease-relevant efficacy biomarkers;
- Preclinical efficacy and mechanism-of-action studies;
- Translation of biological findings into intervention-development requirements.

Fraunhofer IME will contribute:

- Fermentation and bioprocess development;
- Process optimization and intensification;
- Downstream processing and product standardization;
- Scale-up and reproducible production;
- Process and quality data supporting intervention development;
- Technical support for future industrial manufacturing.

Together, MediNResearch and Fraunhofer IME will provide an integrated “biological discovery-to-industrial production” platform for the development of a Deinoxanthin-based healthcare intervention.

This contribution will complement European partners providing disease-specific clinical expertise, patient cohorts, clinical validation, regulatory strategy and healthcare implementation.

4. Expertise Sought

We are currently seeking suitable clinical partners and partners with expertise in AI

5. Preferred Country / Region

Any country is acceptable

6. Keywords

Deinoxanthin, Carotenoids, Antioxidant activity, Non-communicable diseases (NCDs)