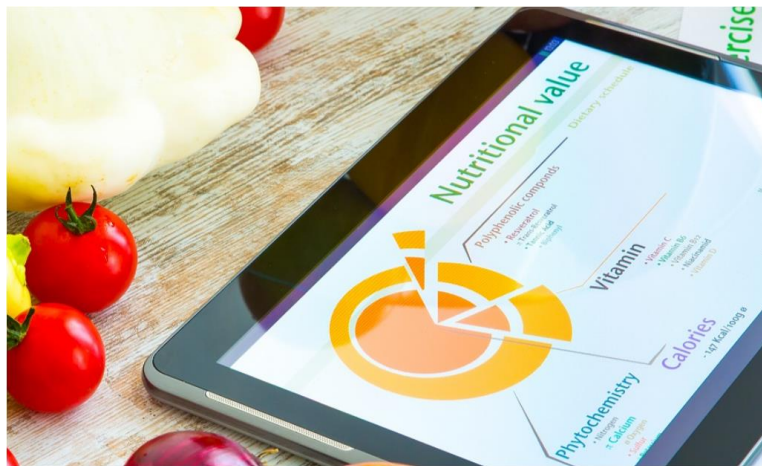




PRESS RELEASE

Study I: Development of a personalised nutrition algorithm in diabetic children
Study II: Personalised nutrition of lactating mothers, aiming at improving preterm infant's health

3 February 2021



NUTRISHIELD aims to integrate all the required elements (laboratory techniques, methodologies, ICT devices & applications, algorithms and other components) into one platform and validate it in clinical conditions, as a new tool for fact-based personalised nutrition based on monitored biomarker data and monitored food intake by actively engaging the users, thus creating the conditions for reducing diet-related health disorders.

Study I-OSR: “Development of a personalised nutrition algorithm in diabetic children”. Diabetes affects 140,000 children in Europe with an annual increase of 21,600 new cases and a dramatic socio-economic impact. Recent evidence indicates that environmental factors such as diet composition, the quality/quantity of exercise and assumption of some drugs (e.g., antibiotics) increase the risk to develop diabetes in children by altering the intestinal environment and, specifically, the commensal gut microbiota that reside in the human intestine. Our objective is to



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analyze the gut microbiome in diabetic or healthy children and adolescents and simultaneously record dietary habits and lifestyle in order to define environmental factors and dietary/exercise patterns associated with diabetes development in children. This study was launched in January 2021 at the Paediatric Unit of the San Raffaele Hospital in Milan, Italy and is currently enrolling diabetic children (with/out obesity) and healthy controls for comparison. A comprehensive clinical, psychosocial and dietetic assessment is performed and biological samples including urine, faeces, and human blood are collected for a multiomic analysis of different genetic and environmental factors (genes, microbiome, inflammatory biomarkers, diet, exercise, antibiotics assumption, etc.). The data will be used for the training of an artificial intelligence-based platform, to develop an algorithm capable to predict diabetes risk and ultimately to design a personalized nutritional and lifestyle programme for diabetic children. The developed platform will be validated in a clinical trial in which pediatricians will give a personalized nutritional and lifestyle programme to children recently diagnosed with diabetes and test the beneficial effect on disease progression.

Study II - HULAFE: “Personalised nutrition of lactating mothers, aiming at improving preterm infant’s health”. This study focuses on prematurely born infants, which are highly vulnerable and have special needs in supplied nutrients. The NUTRISHIELD project will study the effect of maternal nutrition on different nutrients found in human milk and the impact of compositional changes on the health of preterm infants. A use-friendly platform bringing together clinical and health data as well as biochemical information provided by novel sensor devices will be developed within the project and is going to allow an integral assessment of the mother-infant dyad with the ultimate goal of giving nutritional advice to lactating mothers. After a successful pilot study carried out during July and August 2020, the study was launched in October 2020 at the University and Polytechnic Hospital La Fe (Valencia, Spain). Currently the study is enrolling preterm infants (<32 weeks of gestation) consuming either own mother’s milk or donor human milk provided by a human milk bank in situations where the supply of own mother’s milk is insufficient, as well as a control group of exclusively breastfed mother-infant pairs of term infants (>37 weeks of gestation). A comprehensive clinical, psychosocial and dietetic assessment is conducted and biological samples including urine, faeces, and human milk are collected for the analysis of different biochemical parameters with standard laboratory methods and *ad-hoc* designed optical sensors as well as for the study of the microbiome. The data is continuously analysed and used for the training of the artificial intelligence-based platform. We expect that the NUTRISHIELD platform will be a valuable tool for modulating the nutritional status of preterm infants through the mother’s diet.

Project Details EU Project No: 818110

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Project Duration: 48 months

For additional information please contact the Project Coordinator at Alpes Lasers:

Dr. Antoine Muller: antoine.muller@alpeslasers.ch, +41 32 729 95 10

Miltos Vasileiadis: miltiadis.vasileiadis@alpeslasers.ch, +41 32 72 99510



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