UPO BIOBANK
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Project title:

COMBATING AGES (ADVANCED GLYCATION END PRODUCTS) FROM THE WESTERN DIET WITH NATURAL COMPOUNDS TO MITIGATE MUSCLE DECLINE IN SARCOPENIC OBESITY: OBSERVATIONAL STUDY ON THE RELATIONSHIP BETWEEN AGE LEVELS AND SARCOPENIC OBESITY IN AN ADULT POPULATION WITH OBESITY AND TYPE 2 DIABETES MELLITUS

Acronym/working title:

WESTERNAGE

Principal Investigator

Prof.ssa Flavia Prodam

Registration number of the Ethical approval

Comitato Etico Interaziendale di Novara N° CE049/2024

Project summary

Skeletal muscle plays a key role in metabolite consumption and glucose uptake in response to insulin.
Impaired muscle health, particularly loss of muscle mass (atrophy) and strength (muscle wasting, MW), can have significant impacts on metabolic health, predisposing to chronic noncommunicable diseases (NCDs) such as obesity, diabetes, and sarcopenia. This condition is increasing due to the transition to a Western diet (WD) rich in ultra-processed foods, high in sugar, saturated fat, and low in fruits and vegetables, contributing to the increase in global NCDs and promoting insulin resistance, inflammation, and oxidative stress. An example of this trend is the increasing diagnosis of sarcobesity, characterized by decreased muscle mass and increased fat mass, associated with mobility problems and chronic diseases, such as type 2 diabetes.
The mechanisms underlying the initiation and progression of sarcobesity are still unclear. Among molecular mediators, Advanced Glycation End Products (AGEs), found in foods consumed following WD, emerge as possible players in the initiation and promotion of metabolic dysfunction and NCD in general. The purpose of this study is to explore whether elevated levels of diet-derived AGEs may be a mediator in Western diet-related muscle loss, influencing the onset and progression of sarcobesity and predisposing to earlier and more severe metabolic consequences, including the onset of type 2 diabetes. Specifically, the levels of circulating AGEs on the skin and correlated with the stage of sarcopenia in a group of patients with obesity and a diagnosis of T2D will be evaluated. In addition, the correlation between AGEs levels and disease duration will be analyzed. A secondary objective will be the analysis of clinical data to identify metabolites and metabolic pathways responsible for the WD-induced phenotype, in order to identify possible therapeutic targets to enhance the ability to treat sarcobesity and adipose-associated chronic diseases.
The study will have a duration of 19 months from enrollment with measurements taken during enrollment itself and then 6 and 12 months after enrollment.

Duration of Study

Total duration of the study: N/A

Study start: 01/04/2024

Study end: 01/04/2026

Total number of participants involved:

195

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Samples collected:

- ✓ Buffy coat
- ✓ Plasma EDTA
- ✓ Plasma lithium-heparin
- ✓ Serum