

PL015

Presentation of the integractiv project: In search of biomarkers of physical activity and health

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Physical activity (PA) provides important health benefits throughout life and improves many cardiovascular risk factors with a significant impact on mortality. However, it is not fully understood how PA is linked to different health parameters. Moreover, PA is generally determined from self-report questionnaires, potentially subject to response bias, or through more objective measures, but which require the usage of continuous reading instruments, such as accelerometers. Therefore, there is a need of reliable biomarkers to objectively distinguish people who perform low PA from those who do enough, and, more specifically, biomarkers allowing to relate the degree of PA with effects on health. Childhood and adolescence are critical periods, since the processes that underlie cardiovascular diseases and obesity usually have their origin at an early age. They represent important stages to intervene and the availability of biomarkers of PA and health status in these age groups would be very useful to make more personalized recommendations to improve health and prevent chronic diseases. To this aim, omics technologies, such as transcriptomics and metabolomics, are particularly valuable for the identification and characterisation of PA biomarkers. Peripheral blood cells are a relevant source of biomarkers, particularly transcriptomic-based biomarkers. They can be easily obtained and their gene expression profile may partly reflect that of other tissues, being indicative of physiological and pathological states of the organism; however, their potential usefulness in relation to PA in children/adolescents has hardly been explored so far. The European project INTEGRAActiv (<https://integractiv.uib.eu/>) addresses this challenge by focusing on the identification and first step validation of integrated markers of PA and health in children/adolescents. This will be achieved by combining measures of PA and cardiorespiratory and muscular fitness with anthropometric measures, cardiovascular risk factors and endocrine markers, cytokines, circulating miRNA, and gene expression profile in blood cells and metabolomics profile in plasma.

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PL016

Dietary management of histamine intolerance

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Histamine intolerance is defined as a non-toxic adverse reaction caused by a reduced capacity of the human body to degrade dietary histamine at intestinal level. Although some symptoms can be confusing, it is not an allergy, since it lacks immunological mediation, nor is it food intoxication, because it can occur after the consumption of foods with normal or even low amounts of histamine.

The most studied cause of histamine intolerance is a deficit in the intestinal enzyme activity Di-Amino-Oxidase (DAO). DAO deficiency may have a genetic origin, since polymorphisms have been linked with low activity, or it may be secondary to inflammatory bowel diseases, or by a temporary inhibition derived from certain drugs. Recently, it was proposed that there may be a relationship between intestinal dysbiosis and histamine intolerance.

Currently, the most recommended strategy to prevent the appearance of symptoms of this intolerance is the follow-up a low-histamine diet, based on the exclusion of those foods that patients associate with symptomatology. Among the foods that are excluded are those in which a high presence of histamine can be expected, but also some foods that, *a priori*, do not contain histamine. According to data from our research group, some of these foods may contain high levels of other diamines, which due to enzymatic competition for DAO would enhance the absorption of histamine and would explain the appearance of its adverse effects.

In 2017, the European Commission approved the commercialization of an enzyme supplement formulated with DAO from porcine kidney protein extract as a novel food, which would improve the degradation of histamine at the intestinal level, allowing a less restrictive diet to be followed. Currently, work is underway to obtain new sources of DAO from plant sources and in the form of probiotics.

In the framework of the congress, the main results of our research group that add scientific evidence to this new intolerance, especially regarding its dietary management, will be exposed.

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