

The assessment of fatty acids in plasma and in the erythrocyte membrane enables physicians to precisely analyze the metabolic and nutritional condition of the patient, as well as allowing them to evaluate the real incorporation of integrative therapies or diet regimes.

It is important that specialists assess the analytical data along with information concerning the patient: nutritional habits, lifestyle, pre-existent pathologies, tendency toward hypercholesterolemia (high cholesterol).

## GOALS OF THE LIPODIMIC PROFILE

- To provide a useful support to disease prevention and diagnosis.
- To assess the patient's nutritional condition.
- To highlight any possible deficit or excess of enzymes in the metabolism of poly-unsaturated acids, which are important for the health.
- To monitor the patient over time and to decide on the effectiveness of a therapy.

## FIELDS OF APPLICATION

- Sports medicine
- Skin pathologies
- Eye pathologies
- Cardio-vascular pathologies
- Neurodegenerative pathologies
- Inflammatory diseases and processes
- Nutrition
- Obesity
- Diabetes
- Aging
- Monitoring of pregnancy

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### OTHER DIAGNOSTIC TESTS CARRIED OUT BY NATRIXLAB:

- **FOOD INTOLERANCE TEST:** assessment of food intolerance with the ELISA (Enzyme Linked ImmunoSorbent Assay) method.
- **CELIAC TEST:** Immunological evaluation of the possible positivity to celiac disease.
- **HORMONAL PROFILES:** Weight Loss, Stress, Sport, Goodnight, Woman (Fertility/Menopause), Man.
- **CELLULAR AGING FACTORS:** global assessment of cellular aging by analyzing the 4 main processes implied (oxidation, inflammation, methylation, and glycation).
- **ZONA PLUS TEST:** AA/EPA assessment integrated with the analysis of the insulinemia and glycemia, and calculation of the HOMA (Homeostasis Model Assessment) index.
- **CHECK UP PROFILES:** prevention of the main diseases of organs and systems.
- **IN FLORA SCAN:** the most in-depth assessment panel for intestinal health.



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## LIPODIMIC PROFILE

### Assessment of the fatty acids profile in plasma and in the erythrocyte membrane

The term “**Lipidomic**” is understood as the systematic identification of lipids, commonly known as fats, and their structural and functional characterization in both physiological and pathological situations.

## WHAT IS THE LIPODIMIC PROFILE?

The **LIPODIMIC PROFILE** allows subjects and specialists to have the right information concerning lifestyle, diet, and any pathological conditions.

With a **SMALL BLOOD SAMPLE**, the test evaluates the content of **fatty acids in plasma and in the erythrocyte membrane** (red blood cell).

- The dosage of the **PLASMATIC FATTY ACIDS** gives a clear snapshot of the fatty acid content in blood at the time of the sampling (up to 7 to 10 days beforehand).
- The dosage of the **ERYTHROCYTE MEMBRANE FATTY ACIDS** gives a broader and more stable perspective (the erythrocyte half-life is 3 months) and enables physicians to make an assessment of the global fat composition in the cellular membrane and it confirms if the membranes have incorporated the fatty acids taken in with the diet or as integration.

### WHY THE RED BLOOD CELL?

**The red blood cells are responsible for the exchange of oxygen and nutrient substances at all levels of the organs and systems of the human body, and give a good representation of the overall balance of lipidic composition in cellular membranes.**

The **LIPODIMIC PROFILE** also enables specialists, through a **scientifically validated test**, to monitor the AA/EPA ratio, between arachidonic acid (AA-Omega-6) and eicosapentaenoic acid (EPA-Omega-3).

Nutritionists unanimously agree in affirming that the AA/EPA ratio should attest around 4:1, whereas in Italy it is 15:1. **The goal must be to rebalance the quality of the fatty acids intake.**

The analytical data provided by the **LIPODIMIC PROFILE** are summarized in a chart and compared to the ideal values of a clinically “healthy” population.

## FATTY ACIDS FAMILIES

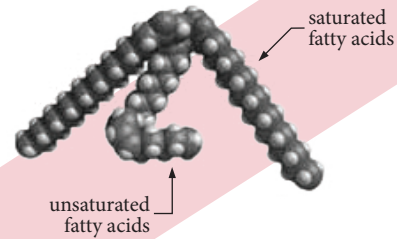
To characterize fats in a structural and functional way, it is decisive to know the quality of the fatty acids circulating in the organism.

**Saturated fatty acids:** energy storage and can be synthesized by the organism. An excessive concentration causes a partial loss of function of the cellular membranes.

**Unsaturated fatty acids:**

- **mono-unsaturated:** energetic function and favor the formation of HDL (good cholesterol). They can be synthesized by the organism.

- **poly-unsaturated:** important structural and metabolic activities. They give the cellular membranes fluidity and permeability and they are precursors of powerful hormones (eicosanoids).



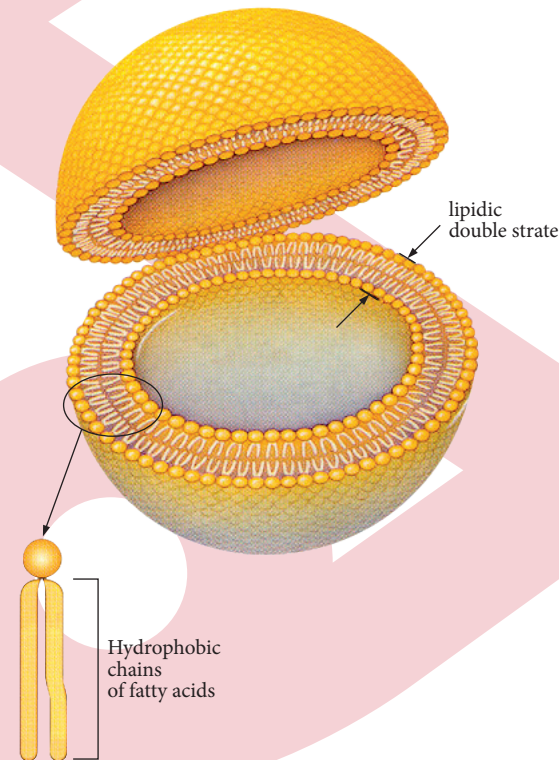
## WHAT ARE THE MAIN FUNCTIONS OF FATTY ACIDS?

- **Source of energy.**
- **Precursors of biologically active substances** which regulate the cardio-vascular system, kidney functions and the immune system.
- **Essential components of all cellular membranes,** they play an essential role in providing cell structural and functional balance (building-blocks of tissues and organs).

The **CELLULAR MEMBRANE** is a dynamic and fluid structure. The membrane's fluidity depends on its composition.

The **CELLULAR MEMBRANE** has an essential function in the cell's life: it defines its boundaries and regulates the flow of molecules from the outside to the inside and vice-versa.

**The membrane's structure, especially the balance between saturated and unsaturated fats, is essential for the cells and the entire organism to function properly.**



## FUNCTIONS AND PECULIARITIES OF THE ESSENTIAL FATTY ACIDS

It is important to take in with the daily diet **essential poly-unsaturated fatty acids (Omega-6 and Omega-3)**. The poly-unsaturated fatty acids are highly exposed to lipid peroxidation processes, which are often triggered by oxidative stress and, for this reason, in case of intake of poly-unsaturated fatty acids, it is recommendable to increase the contribution of antioxidants.

Enzyme or nutritional deficiencies may negatively affect the synthesis of poly-unsaturated fatty acids. The **Omega-3** and the **Omega-6** compete for the same enzyme complex; in this way, the Omega-3 inhibit the metabolism of the Omega-6 and vice versa.

Enzymatic activity is conditioned by several factors: *gender, age, incongruent intake of some types of drugs, diet-related factors* (high levels of cholesterol and saturated fats; zinc, magnesium, vitamin deficiencies, fasting or imbalanced diets).

The enzyme's activity is reduced also in presence of particular pathologies: *diabetes, certain neoplastic forms, pre-menstrual syndrome, cardio-vascular diseases, atopic eczema* (skin disorder), *alcoholism, viral infections, stress*.

The body need of essential fatty acids is tied to both **physiological** (pregnancy, growth, aging) and **pathological** situations (degenerative diseases, chronic diseases, diseases that affect the immune system, tumors).

## CORRELATION BETWEEN OMEGA-3 AND PATHOLOGIES

Alla la fine degli anni '70 venne osservato che la popolazione della Groenlandia, grande consumatrice di pesce azzurro, presentava un'incidenza di mortalità per cause cardiovascolari molto più bassa rispetto ad altre popolazioni che seguivano una dieta a basso consumo di pesce.

A series of researches confirm the favorable role played by **Omega-3** fatty acids on human health and their action in preventing and treating:

- cardio-vascular pathologies
- skin pathologies
- eye pathologies
- kidney pathologies
- neoplasia
- neurodegenerative diseases
- inflammatory diseases and processes

**The different effects of the Omega-3 fatty acids influence a large number of aspects of wellbeing. This is the reason why health or impaired wellbeing depend on the choices we make daily.**