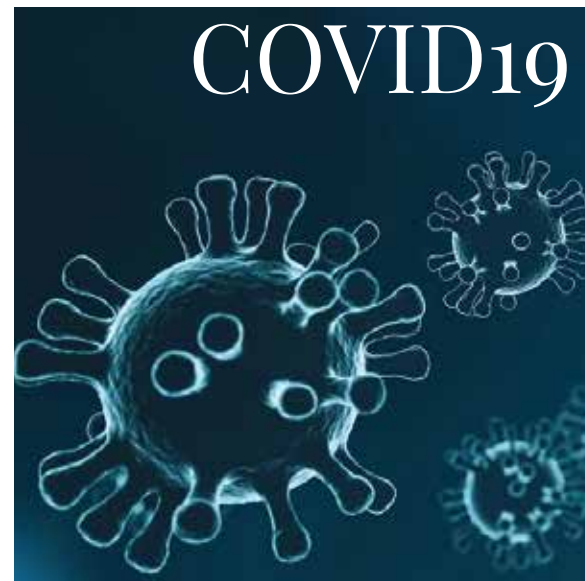




Among the precautionary measures required to reduce the risks and the spread of COVID19 are: avoiding crowded places, daily ventilation of living and working spaces, disinfection of surfaces and hand hygiene along with strengthening the body as well as supporting the immune system.

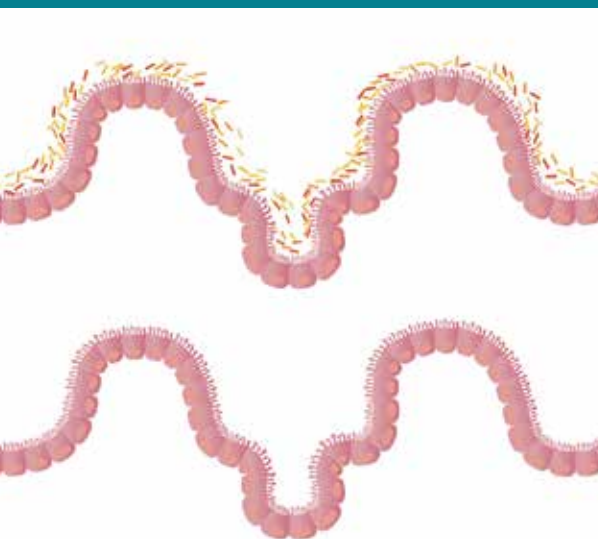
We know that microorganisms are everywhere, including on/in the human body. Most of them are usefeul for agriculture, for the food industry, for environmental protection but there are also some infectious pathogenic microorganisms that we need to knot how to avoid.

The microbiome (microflora or microbiota) represents an amount of trillions of microorganisms (bacteria, fungi, protozoa and viruses) that colonize the skin, nose, digestive system and lungs, but the largest amount of them is in the colon and in the small intestine. The „microbiom” is even labeled as a „supporting organ” because it plays a key role in supporting the physiological functions of our body.

At the intestinal level, the microbiome includes at least 1000 different species of bacteria with over 3 million genes (150 times more than the human genes). One third of the intestinal microbiome is common to most people while two thirds are specific to each of us, as an individual identity card, being unique just like a fingerprint.

It is known that a healthy gut microbiome is crucial in creating a response to the attack of pathogenic/infectious microorganisms such as coronaviruses. Recently, epidemiologists have demonstrated the role of the gut microbiome in the body, as an immune response to the infection and its role in preventing not only the lung damage (as in the case of coronavirus infectious effect) but also to the other vital organs. Genetic epidemiologist professor Tim Spencer, King’s College London, says that „these excessive immune responses can cause respiratory failure and death” and that „support” should be considered rather than „stimulation” of the immune system, as an hyperactive immune response can be just as risky as a hypoactive one”.

(https://www.nutraingredients.com/Article/2020/03/23/Microbiome-maintenance-Good-gut-health-could-tackle-COVID-19?utm_source=copyright&utm_medium=OnSite&utm_campaign=copyright)



Intestinal bacteria produce several beneficial chemicals and activate vitamin A in food, which helps regulate the immune system. Scientists have found that the gut microbiome can regulate the immune system. Bacteria, which is a part of the microbiome, moderate the active levels of vitamin A in the gut, protecting the microbiome from an overactive immune response.

In this context, Prof. Tim Spector believes that some dietary supplements may „stimulate the immune system” and the food consumed has a great impact on the diversity of the gut microbiome”. „A diverse microbiome is a healthy microbiome, which contains many different species that play a role in immunity and health”, says Spector. „Microbial diversity decreases as we age and this explains the changes we see in immune responses at older ages, so it is necessary to maintian a healthy microbiome throughout life.”

Strengthening the immune system

In the hope of discovering a COVID-19 vaccine, ways of defense are sought by strengthening the immune system. The best way to increase the diversity of the microbiome is the consumption of high-fiber plant foods and fermented foods (fermented dairy products, especially probiotics, pickled vegetables etc.). Diet is considered a very important part of prevention and treatment. A diet rich in **vitamins, trace elements and minerals and a sufficient daily intake of fluids** provide the body with the necessary resources to combat the effects of viral infections.

Natural foods rich in vitamins help in rapid recovery. Highly digestible proteins are recommended: **egg, protein powders, almond milk, dried fruits / nuts, peanuts, leguminous soups, yogurts** - which are also sources of calcium and probiotics, fats for adequate caloric intake (eg **avocado**), **whole grains**, which are important sources of dietary fiber and fruits rich in vitamin C (eg **apples, citrus fruits, kiwi**) or rich in antioxidants (**berries - blueberries, blueberries, currants, citrus fruits, seafood, etc.**), vegetables (e.g. cruciferous rich in phytonutrients: **cabbage, broccoli, cauliflower, radishes**).



High fever and persistent cough are two of the major symptoms of Covid-19 disease. Therefore, hydration of the body is essential, as water loss accelerates when fever occurs. **75-80% of the water intake** must come from **ingested liquids (water, tea, soup)** and **15-20% from foods (fruits and vegetables low in calories - cucumbers, radishes, spinach and pepper**, which provides minerals, but also regulates digestion due to enzymes and fibers). It is also recommended the consumption of liquids in the form of hot drinks (milk, lemonade and teas / teas infusions), fruit and vegetable juices (tomato juice, spinach, carrots), soups / salty broths (mushroom soup, chicken soup or chicken, garlic soup).

Tea also offers many benefits: hydration, detoxification, support of the immune system, stimulation of the functions of internal organs, etc. The most suitable types of tea are herbal teas (**linden, mint, thyme, shock flowers, ginger, onions**, etc.), preferably to be consumed without sugar. For the cough treatment is also recommended the consumption of **syrups such as: black radish syrup, horseradish, sea bass, pine buds, juniper**. Also, traditionally, **cough candies (peppermint, eucalyptus)** are used. Using in synergy the properties of **honey, propolis and fir buds**, a very effective syrup can be prepared in the treatment of respiratory diseases.





Honey is commonly used for respiratory problems. Even the World Health Organization (WHO) recognizes honey as a potential means of treatment for dry cough and other symptoms of infectious diseases in the upper respiratory tract.

Honey can provide good results in coughing and improving sleep quality, as shown by a clinical study from 2012 (Cohen et al., Effect of honey on nocturnal cough and sleep quality: A double blind, randomized, placebo-controlled study, Pediatrics) but also to relieve neck irritation. **Lavender honey, thyme** but also the **mixture of honey with propolis** can be of real help in recovering the voice affected by a laryngitis or a pharyngitis.

Raw honey - not thermally processed, contains beneficial bacteria in the category of lactobacilli that can supplement the intestinal flora whose role in the immune status of the body is well known. Scientific studies (Watanabe et al., 2014) have also shown that honey has inhibitory activity on influenza virus.

The pollen harvested by the bees - in raw or dry state, as well as its natural derivative, (fermented pollen) can be used to supplement the diet, contributing with important nutrients (vitamins, minerals, polyphenols, carotenoids, enzymes, in total over 250 such compounds) when feeding the body. In addition, pollen is a natural source of compounds with antioxidant action that helps in fatigue, exhaustion (conferring energy), supports the immune system, vitality and resistance of the body.



Due to the flavonoid compounds, the esters of the phenolic acids with aromatic alcohols and the essential oils in the volatile fraction, propolis can restore comfort in the processes affecting the circulatory system. Propolis acts by stimulating specific and non-specific immunological factors and results in an increase in the body's overall resistance to disease. Thus, propolis is defined as a "biological response modifier" (BRM), as it activates cells of the immune system that produce cytokines (Mizrahi et al., 2014).

Natural or lyophilized mother bee milk - in addition to the nutritional baggage (proteins, enzymes, lipids, carbohydrates, the whole vitamin B group), is useful for crossing outbreaks of influenza or acute viral infections, but its use must be made but with caution in people with a history of allergies and especially those with hormonal disorders.

There are many formulas of dietary supplements based on hive products. The most common formulas are honey pastes that include in their composition both bee products (propolis) and various extracts from herbs, herbs and essential oils with action on maintaining the health of the respiratory system (thyme, eucalyptus, mint, etc.) and addition of vitamins (especially vitamin C with the role of supporting the immune system and implicitly the respiratory system).

Recent studies have shown that there are "**nutraceuticals**" (dietary supplements and OTC-medicines that are sold directly, without the need for a prescription) that can help reduce lung inflammation (caused by RNA viruses) or are capable of supporting the organism, the first step in creating antibodies that can fight against viral infections.

(Mark F. McCarty, James J. Di Nicolantonio, Nutraceuticals have potential for boosting the type 1 interferon response to RNA viruses including influenza and coronavirus. Progress in Cardiovascular Diseases. 2020, Feb. 12).



Given that there is still no treatment for COVID-19, and the treatment of influenza has its limits, Dr. Di Nicolantonio, a researcher at Saint Luke's Mid America Heart Institute in Kansas, says that **certain dietary supplements can be included in the strategy to fight the disease**, bringing an improvement in the status of those infected with RNA viruses.

All the measures mentioned: **antithermal treatment, foods rich in vitamins, hydration, to which we add rest and the isolation of others, are mandatory measures to combat viral infections.**

"Whether you are shopping for yourself, your family or for elderly relatives and friends, choosing foods that support a healthy gut microbiome is much more important than stockpiling toilet paper" says Professor Tom Specter. Managing your mental health, staying physically active and getting enough sleep will also help to keep your immune system in good shape. And don't forget to wash your hands."

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