

HERBARIUM CONTRA VIRUS

Nature's gift

Herbs – Nature's Special Forces.

I will start this written narrative of mine with an incident years ago that made me think, I finally revised the worldview I have been taught and I evolved by making a slow but steady change of course by 180 degrees... Many things that I considered to be facts until then have changed over the years.

"When the mind expands by a new idea or experience, it never returns to its old dimension!"

So I moved on... I evolved, I changed and nothing is the same as before and an - insignificant for others but - important event for me is responsible for everything that happened exactly 40 years ago, on August 10, around noon, in a small Greek island, in the middle of nowhere, blown by the winds and pounded by the huge waves of the Mediterranean.

Being a biology upperclassman at the German University of Göttingen in the – back then - Federal Republic of Germany, I found myself amongst four families of tourists and another four or five individuals out in Antikythera, a small but exceptionally beautiful island, a few miles away from the deepest point of the Mediterranean

We arrived on the island by boat from Kapsali in the southern part of Kythera. We had been "warned" that we would probably be barred there because of the meltemi winds, but none of us took seriously the warning of those who knew... not even me who I supposedly had experience at sea! Back then, all I wanted to do was speargun hunting at night, in the most wild, almost untrodden parts of the island, swimming alone in the endless black of the sea... with only my flashlight! It was the time when I was completely ignorant of dangers and in a way I was walking on tight ropes without realizing it!

On the first day everything went perfectly. I caught huge fish, which all of us tourists ate - and several of the few locals - in the tavern of the island which was also a cafe, a telephone company (phone with a crank), a grocery store, a pharmacy and everything else one could imagine.

The second day was the ultimate disaster. I woke up around six in the morning from a terrifying hum, which was the huge and frightening waves frantically pounding on the rocks and a demonized wind that lifted everything up. The locals pulled the boats ashore and secured them with secondary and tertiary anchors and ropes on the outside.

We were experiencing the Kythira fishermen's "warning" in all its glory - we were stranded for good on the island, who knows for how many days. It could go on for weeks even, as one of the locals confided in me. Somehow, we all came to terms with the idea that it would be several days before we could leave the island. Only at one point, a small cove in the South of the island, we could swim and in order to get there it required a lot of walking on uphill slopes and down a cliff! But it had plenty of octopuses, morays, white seabreams and puffers, so as you understand, we were never short in appetizers!

The third day was a day of panic, with anxiety and a lot of suspense... during which incredible things happened.

I was alone for speargun hunting in the creek I described before. Suddenly I heard a female voice calling for help from afar. I just dropped everything and climbed up following the woman's voice. After a while I saw her stumble on the stones, carrying a small child in her arms. She was carrying it from the other side of the island where they had gone for a walk. She told me in German that she had been bitten by a large snake and from her description I realized she was talking about a viper. I took the child without a second thought like a sack in the back and, as soon as we could, we hustled to the port.

After a while, when we managed to get there, exhausted, I explained to the locals what had happened and I saw despair in their eyes... There was no doctor... there was no antivenin... Basically, the people abandoned as they were there, in God's mercy, they had nothing! They tried to call the mainland and ask for help, but it was impossible. In any case, in order for help to come, the weather had to improve and the sea to get calmer.

That's when it happened: an old shepherd arrived at the café, panting and holding a small saucepan containing a black juice. He approached the German woman who was holding her child, sitting on some crates and looking at the child who was looking at him, he nodded giving her the pot with the juice.

As if she were somewhere else, she took it and started giving it to her son with a spoon given to her by someone at the cafe.

I do not want to go into too much detail... but, five days later, when the coast guard boat arrived from Kythira, the child was unwell, but fine - he made it.

When foreign and Greek journalists arrived on the island, days later - you see the little boy's story had made headlines in the major media - to talk about the medicine made by the shepherd and which saved the child's life, they were surprised by his answer: "... here on this island alone in the middle of the sea, when something happens to us, only God and nature can save us. If I get sick, I go out and collect whatever green, red, yellow, white or other color I find, I put it in the pot, boil it and drink it... Nature has all the medicines ... I

gave something like that to the little one, but do not ask me what it was, because I do not remember... I cut without seeing what I cut ... “.

It was the day that some things changed for me and I will never go back to who I was!

“Nature can supply us with everything... even the medicine that saves our lives!”

The new Coronavirus that came and probably is here to stay for good, the H1N1 flu that has been present for years and who knows what else will follow will bother us in the near future, since there is no specialized antiviral drug for this RNA virus, SARS-CoV2 and a safe and effective vaccine will take longer than it appears to be created, tested and reviewed in Phase II and III randomized trials in a large sample of patients, approved, put into production and produced in sufficient quantities in order to be available in all countries concerned and as you understand, the production only of 5-6 billion doses is not so simple - it takes some time to become a reality.

As scared, frustrated and left to their own fate people may feel, it would be good to know that despite the difficulties that seem like mountains, there are many ways to react in order to protect ourselves from this very dangerous virus and they are found in nature, all around us and waiting to help us cope with the onslaught of pathogens, infections and diseases in general.

Nature is self-reliant, independent and self-sufficient. For every poison, it has an antidote ready... for every bacterial infection there is the natural antibiotic, for every virus the natural antiviral herb and for every disease the natural medicine.

Everything is around us. All we have to do is discover them and make them part of our lives!

... about therapeutic herbs and fragrant plants - protection and promotion of Health

Before knowledge could be organized into coordinated science and before everything became a lucrative industry, the “healers” were nothing more than wanderers, practitioners and wise men, and the treatments they suggested were herbs and their combinations that cured diseases in both humans and animals. In the age we live in - of the absolute industrial revolution - herbs are getting their honor back. These are natural remedies, from which we never really “got rid”, since their wise secrets from antiquity evolved into scientifically substantiated theories, fully accepted by the scientific community, with tens of thousands of studies and scientific articles referred to with dithyrambs in these, deifying their exceptional properties...

The preventative for the health and healing properties of herbs have long been known in ancient times, and as we shall see later, the Sumerians and Assyrians were the first people to submit the first information about medicinal and fragrant plants, but with the Greeks bidding relatively well in a unique

way, even conducting informal studies on a large sample of patients ... something like modern Phase III studies.

The “Patriarch of Medicine”, Hippocrates, treated various diseases of patients with only the use of specialized herbs. He used hundreds of herbs for which he wrote his views on the battlefield against diseases, even plants that today are considered by the ignorant to be indifferent or insignificant, such as nettle, oregano, mallow, etc but for him they were extremely important for the treatment of diseases as medicines.

In the later traditional Greek medicine, the Vikiatrists, who lived around the ravine of Vikos in Epirus are known for using the herbs of the wider area both for therapeutic purposes and prevention.

The development of the science of biology and chemistry in the 19th century, helped the understanding and development of pharmaceutical effect, thus paving the way for the creation of new drugs. However, to date the largest percentage of drugs on the pharmaceutical market are of plant origin and out of the 500-550 new drugs approved worldwide during the decade 1983-1995, more than 45% to 50% came from the earth's flora, that is, were herbs.

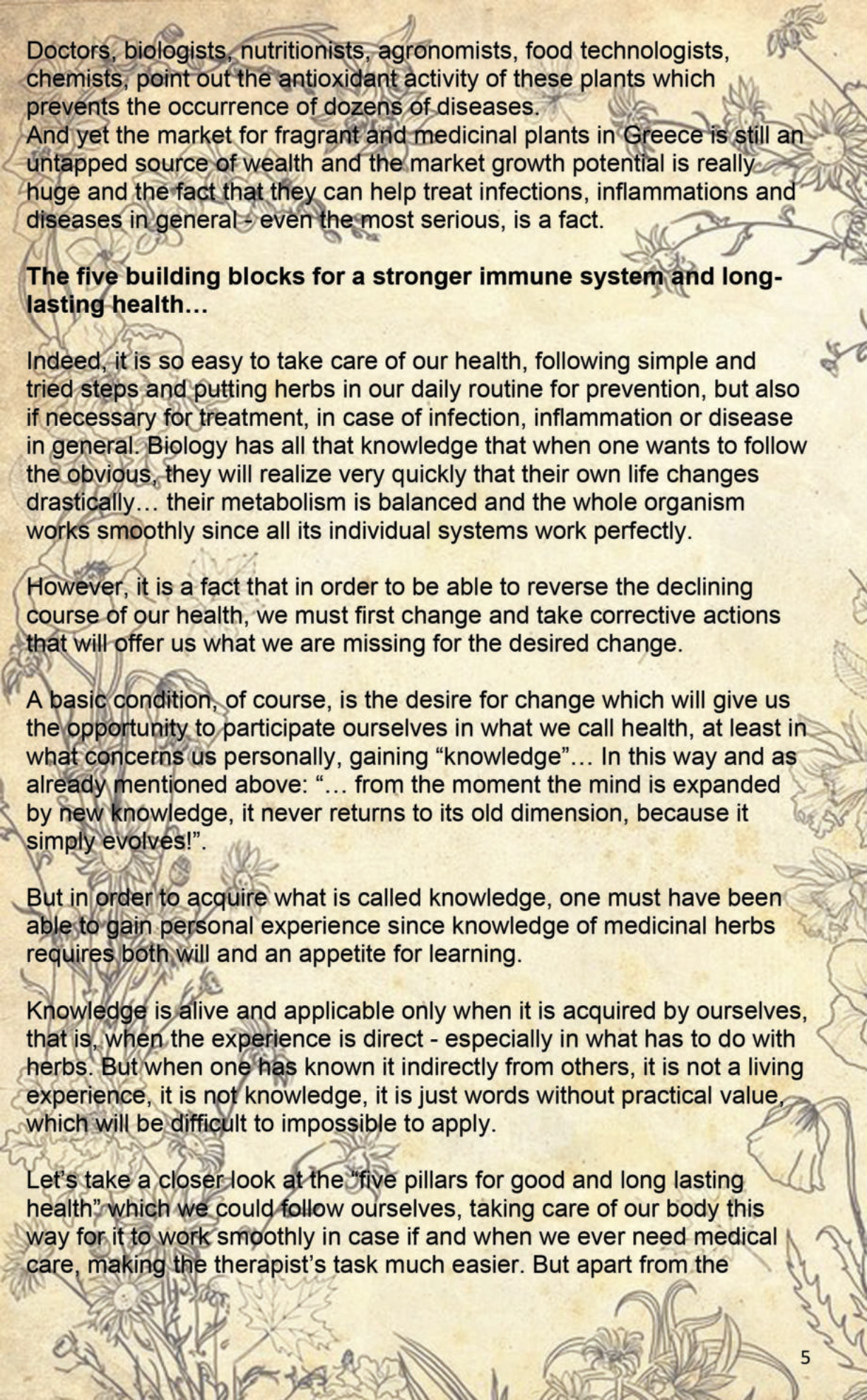
It's good to know what exactly “fragrant plants” and “herbs” mean.

There are generally no clear boundaries or criteria for classification into one category or another. Nevertheless, there are categories, such as medicinal and fragrant plants, and herbs - culinary and those that have healing properties. Medicinal plants are plants that contain one or more active substances which have the ability to prevent, alleviate or even cure infections, inflammations and diseases. They are the treasures of the earth's flora that essentially support the five orthomolecular foundations for the protection and promotion of health.

Another large group is the fragrant plants. What is common about them is the content in various parts of their essential oils, which also give out the scent. Many of them also have powerful medicinal properties.

Herb is a more general term and refers to plants that have a beneficial effect on humans and are used mainly in the form of decoctions.

Greek fragrant-medicinal plants are the modern so-called superfoods. Greece, according to the Hellenic Society of Environment and Culture data, is still the “plant paradise of Europe”. Although it holds 6% of the Mediterranean, it hosts 26% of the Mediterranean flora. Approximately 1,700 species and subspecies of fragrant-medicinal plants have been identified, for which there are published pharmacognostic studies. Of these, about 250 are endemic and do not exist anywhere else, with 75 of them classified as rare and endangered.



Doctors, biologists, nutritionists, agronomists, food technologists, chemists, point out the antioxidant activity of these plants which prevents the occurrence of dozens of diseases.

And yet the market for fragrant and medicinal plants in Greece is still an untapped source of wealth and the market growth potential is really huge and the fact that they can help treat infections, inflammations and diseases in general - even the most serious, is a fact.

The five building blocks for a stronger immune system and long-lasting health...

Indeed, it is so easy to take care of our health, following simple and tried steps and putting herbs in our daily routine for prevention, but also if necessary for treatment, in case of infection, inflammation or disease in general. Biology has all that knowledge that when one wants to follow the obvious, they will realize very quickly that their own life changes drastically... their metabolism is balanced and the whole organism works smoothly since all its individual systems work perfectly.

However, it is a fact that in order to be able to reverse the declining course of our health, we must first change and take corrective actions that will offer us what we are missing for the desired change.

A basic condition, of course, is the desire for change which will give us the opportunity to participate ourselves in what we call health, at least in what concerns us personally, gaining "knowledge"... In this way and as already mentioned above: "... from the moment the mind is expanded by new knowledge, it never returns to its old dimension, because it simply evolves!"

But in order to acquire what is called knowledge, one must have been able to gain personal experience since knowledge of medicinal herbs requires both will and an appetite for learning.

Knowledge is alive and applicable only when it is acquired by ourselves, that is, when the experience is direct - especially in what has to do with herbs. But when one has known it indirectly from others, it is not a living experience, it is not knowledge, it is just words without practical value, which will be difficult to impossible to apply.

Let's take a closer look at the "five pillars for good and long lasting health" which we could follow ourselves, taking care of our body this way for it to work smoothly in case if and when we ever need medical care, making the therapist's task much easier. But apart from the

possibility of the disease, it is extremely beautiful to be healthy by prevention. Herbs can actively contribute and make a difference!!!

1. Control of inflammations.

As scientists investigate deeper into the underlying causes of disease, they begin to find links to an old defense mechanism of the immune system called "inflammation" - the same biological process that causes redness of the tissue around a thorn in the hand and causes swelling in the inflamed area. In most cases, the inflammation acts as a lifeline, allowing the treatment of various bacteria, viruses and parasites that cause diseases. When any of these pathogenic microbes enter the body, the inflammation organizes a defensive attack against them and any infected tissue. Then the recession prevails followed by healing. But sometimes this whole process does not stop. Sometimes the problem is in some genetic predisposition, other times something else, such as smoking or hypertension, which help the prolongation of the process. Then the inflammation transforms into chronic and gets out of control.

When this happens, the body turns against itself with consequences which seem to be fueled by various kinds of diseases. Now that life expectancy has increased, our bodies have probably become, from an evolutionary point of view, victims of the strategies and successes of inflammation medicine that are likely to spiral out of our control. It also seems that many of the characteristics of the western lifestyle, such as a diet rich in carbohydrates and saturated fats, with limited physical exercise or none at all, exacerbate the problem and facilitate our body to develop inflammation. By controlling inflammations and by using herbal decoctions of "mother earth", we dynamically shield and apply both the defense of our body and our general health.

2. Antioxidation and detoxification.

Think of the human body as a big, complex plant. It simultaneously performs millions of functions that keep us alive and support us in coping with demanding situations every day. But like any plant, the body must remove any substance that is unnecessary or threatens its existence. Antioxidation and detoxification, two very different processes with a common purpose, are working towards this direction. Many of the medicinal herbs have excellent antioxidant and detoxifying properties.

The body is burdened daily by stress, diet, abuse, environmental pollution, intense physical fatigue, but also infections / viruses such as H1N1 flu and COVID-19, which can potentially lead to severe health complications, even death. Apparently most of these conditions, except of course the infections, do not have any acute effect on the body. But

in reality, even those to which we do not give the required importance, they heavily burden the body with “free radical” molecules in the long run, leading to premature destruction of healthy cells and a set of degenerative diseases. The role of the antioxidant mechanisms and substances are to sacrifice in order to protect the body's cells and benefit health. One of the most important antioxidant systems that the body inherently has is that of “glutathione”, which can be greatly helped by active substances of many herbs so that it will remain ready to fight.

Detoxification is the process of removing toxins from the body. Toxins are the by-products of all bodily functions, respiration, abuse, diet and drug use. The most important “detoxifier” in the human body is the liver, which absorbs like a sponge any harmful substance that arises and removes it directly from the body. The kidneys, the skin and the respiratory system play secondary but also important roles in detoxification.

The protective functions of all of these organs can be greatly assisted by a large group of healing herbs, which exist in nature next to us or in special healing herbal teas!

3. Regulation and protection of the gastrointestinal tract

The proper function of the gastrointestinal tract is an important part of health. It facilitates digestion, the absorption of vital nutrients and from them the body is supplied daily with its necessary “fuel” and the metabolism and the immune system work better. Many cases of anemia, osteoporosis and many other diseases are due to poor digestion but also deficiencies of basic micronutrients while a toxic, dysbiotic and inflammatory intestine can potentially cause many problems, such as allergies, autoimmune diseases, etc. In no case should the gastrointestinal system be neglected, because it can easily open the Bag of Aeolus! Here also the contribution of healing herbs can make a difference by providing the body with almost all those micronutrients that it needs so much!

4. Orthomolecular nutrition of cells

Biological researchers have discovered that no matter what one does there is no way to improve health at any level unless the cells are properly nourished.

Cellular nutrition and nourishment

From this awareness the program of orthomolecular approach to nutrition was born, which is nothing more than proper nutrition, in relation to the supply of micronutrients. It is the very foundation from which cells are nourished, for proper metabolism, growth, repair, detoxification, antioxidation and reproduction. With a balanced

combination of essential vitamins, minerals, enzymes, proteins, carbohydrates and fats, the best foundation for health and wellness is achieved. The designation "Cell Nutrition" is attributed to the correct method which leads to the beginning of building a solid foundation for lasting health.

Our bodies consist of trillions of tiny building blocks, living cells that grow which are replaced many times during our lifetime, and sometimes die. These cells need good nutrition to perform their metabolic functions: growth, repair, antioxidants, detoxification and reproduction. A balanced diet and the selection of specialized medicinal herbs allow the reduction of calorie absorption, while maintaining the nutrients that are necessary for good health.

5. The control of oxidative stress.

Oxidative stress, in addition to premature aging of the body is also blamed for the appearance or aggravation of serious diseases and the disorganization of the immune system. Various biological tests can be used to calculate the levels of oxidative stress in the body in order to deal with it more effectively. Oxidative stress has been found to be associated with the onset or worsening of viral and bacterial infections and generally diseases such as Covid19 infections, seasonal influenza, cancer, atherosclerosis, cardiovascular diseases, arthritis, Alzheimer's disease, diabetes, infertility, osteoporosis, bronchial asthma, kidney diseases, thyroid diseases, etc. The oxygen, which enters the body through the breath and is transported by the blood to the cells, is used at a rate of about 95% for energy production. The rest causes the creation of free radicals which are necessary for our body since they are part of our immune system. But when the body is under adverse conditions and the concentration of free radicals increases significantly then their beneficial role is undone and they become destructive to the body, destroying the double semipermeable membranes of the cells. This large increase is characterized as "oxidative stress". Here, too, groups of herbs with antioxidant properties play an important role, acting drastically, minimizing the oxidative stress which is responsible for a variety of infections and diseases, or preventing its occurrence, consolidation and systematization.

Knowing the importance of these five foundations, we can offer the maximum to our body, preventing many troubles and avoiding even more.

But as easy as it is to do some things for our body and its health, it is just as easy not to pay attention to them, to skip them and do nothing...

Exactly how the healing herbs work, you'll surely ask

But, with what was mentioned above already, towards the end of my introductory narrative, it seems that the secret for the protection and promotion of health through the shielding of our immune system is in the arms of nature, in herbs – all we have to do is our will to find it and to add it to the quiver of our defense!

Herbs are a big part of the plant kingdom and are our point of contact with Mother Earth - a hub of communication between kingdoms - where "Humanity" meets "Nature". The tradition of the healing art of herbs and medicinal plants in general is lost in ancient times. In a completely timeless past, as timeless is the Wisdom itself that is inherent in the human element but also in the natural world that surrounds. However, the evolutionary stage of our time leads to the recognition of this unity, characterizing us as individuals, groups, humanity and also an evolved planetary wholeness.

Since ancient times...

Since ancient times, herbs have been the main ingredient of the human diet but also a key weapon in the fight against the various diseases known at the time, as well as prevention and treatment. In Eastern cultures, especially in Japan and China, they were also used daily, mainly for therapeutic but also for preventive purposes.

In recent years, Western interest has shifted to these ingredients, as their beneficial properties are proven by more and more scientific studies all around the world. These ingredients are widely used not only in the homeopathic treatment approach, but are now active ingredients in many important and highly innovative therapeutic formulations of the global pharmaceutical industry, even in the treatment of many forms of cancer! It is no coincidence that the "taxanes" that save lives in breast cancer cases come from the coniferous tree (pine) *Taxus*! Nor is it a coincidence that the active ingredient oseltamivir of the leading antiviral drug Tamiflu today, against H1N1 flu and its subtypes, comes from the herb called aniseed...

So, magical herbs... oak, the sacred tree of the Druids. So true was the belief of the Druids in the power of this sacred tree that they claimed that: "... as long as one stays for a while under the shade of this sacred tree he will be healed".

The Druids fanatically believed that anything that grows on an oak tree can only be sent from heaven. They believed that it was a tree with divine properties and that is why during the ceremonies they crowned their heads with wreaths woven from leaves and thin oak branches. They also ate acorns almost daily, because they deeply believed that by eating these nuts, they expanded their wisdom and spirit.

We have all heard or read from time to time that herbs have magical properties and almost all peoples have used magical herbs since ancient times.

They used the magic herbs in amulets that they wore on them, placed them on their front door, on the window, on the bed, drank them and ate them to enjoy their benefits. They used them to protect themselves from sorcery, demons, nightmares, but the most important of all was the protection from diseases.

The almost mysterious healing power of herbs and their ability to soothe pain and give healing to difficult infections and diseases are well known before writing was even discovered.

The ancient Egyptian naturalists, botanists and herbalists once had an inspiration, which they realized. They placed the herbs of their choice in fat and left this pulp in the rays and heat of the sun. With the heat and the effect of ultraviolet radiation, the action of which they were not aware at the time - perhaps only assumed, the aromas of herbs were released and merged with the fats of the mixture. In this way the ancient herbalists prepared ointments and poultices.

The Minoans, on the other hand, used herbs in their daily lives and, among other things, they used lily, myrtle, saffron, oregano, garlic, marjoram, fennel, furze, dill, breadseed poppy, cedar, cypress, olive oil and much more, preparing pharmaceuticals!

The Sumerians, one of the most ancient peoples in the world, knew the healing properties of about 200 plants such as thyme, saffron, oregano, fennel and many others.

In the 16th and 17th centuries many herbariums were published to help those involved in herbal medicine, identify and use plants and herbs.

Leading English physician Nicholas Culpeper bequeathed to humanity a treasure trove of herbal remedies, some of which are useful and valuable today, 400 years later. This herbalist from the past gave us the first written testimonies about the properties of asparagus and how they increase libido, typically saying that asparagus "stimulates desire in both men and women".

The Anglo-Saxons had nine magical herbs that they used against all evil and with which they prepared a magic ointment that - they believed - cured every disease and wound on earth!

On the other hand, let us not forget that even today, in many areas of Greece, many people place on the front door of their house on New Year's Eve the well-known giant squill. On New Year's Day, one of the two parents of the family takes the giant squill in their hands, touches it lightly on the heads of all the members of the family, and later they all hang the giant squill on the front

door of their house. The giant squill was used and is used by people to gain the favor of luck.

Even Pythagoras is said to have hung the giant squill on his front door as a symbol of rebirth and good health. And all this because this strange bulb, even when it is forgotten somewhere, in a corner of the house, will take out leaves and thus will start the eternal cycle of life again!

So when people saw this great vital force of the giant squill, they believed that it also had the power to transmit it to them!

Other herbs were boiled to make magical protective filters which they drank and so on.

They believed that fennel protected them from black magic and so they hung it from the roof beams on June 24 on the eve of the feast of St. John to bring them luck and put its seeds in the locks of houses that they thought were haunted to drive away evil spirits. Absinthium was one of the favorite magic herbs because they believed that it allowed people to "see the future".

Rosemary was the herb of faith. The ancient Greeks used it in public and religious ceremonies and burned it as incense. The Romans offered it to patron deities and burned it to purify with its smoke the places where they spent their day, the places where they slept and their workplaces. The ancient Greek wise men braided it in their hair and rubbed its essential oil on their foreheads because they knew since back then that rosemary strengthens memory. Arab physicians appreciated it, as they knew it restored vitality, memory and speech. Today it is known that rosemary strengthens the nerves, renews the aging cells of the body, it is a powerful cardi tonic.

With rosemary, balm, sage and thyme we can prepare a very strong drink that renews our body and gives us harmony, well-being and good mood!

So we observe that in every tradition there are a number of customs, which are related to herbs, their healing properties but also to their collection, use and storage.

We see in these traditions the Druids, barefoot, dressed in their long linen garment, with their golden scythe respectfully cutting the precious plants, with reverence, as some of these precious herbs the tradition had it that they should not be cut with iron tools!

We see experienced doctors, sorcerers and healers cutting their precious herbs with their left hand only and never looking to the windward side, never turning their face backwards, nor talking to the plants and if one of them falls to the ground they never bend down to lift it, because its beneficial power had already returned to Earth.

The ancient Greeks had inexhaustible knowledge in the science of natural medicine, but they did not have one thing - the current technology and achievements of science, as they were formed in the last 2,500 years, especially the last 100.

And what is happening today?...maybe you wonder.

So let me tell you of just two of the thousands of studies that have already been done and completed on the magical - one would call them - properties of herbs, from which the active ingredients of a plethora of innovative drugs that save lives derive:

In a new study, from the University of California, researchers explain the molecular mechanisms that make lavender, fennel and chamomile work as powerful antihypertensive remedies, while another highlights the excellent antiviral ability of wild oregano.

And now let's get to today:

Coronavirus SARS-CoV2 has entered our lives and the infection of the lower respiratory tract, COVID-19, threatens us:

The coronavirus pandemic, COVID-19, caused by the SARS-CoV-2 virus, officially started in December 2019 and maybe just before. The virus was first detected in the Wuhan region of China and has since spread to more than 200 countries around the world. It is a new strain of coronavirus that until then had never been isolated in humans.

Coronaviruses are a group of viruses that often cause mild respiratory infections in both animals and humans.

Most people become infected with coronavirus at least once in their lifetime, with mild to moderate cold-like symptoms, and rarely does a coronavirus mutate and spread from animals to humans, as has been the case with SARS in 2003 and MERS in 2012. When a new virus infects humans, no one is immune to it and everyone can be infected. This widespread transmission of the virus is also the cause of global concern and the virus causing COVID-19 infection has been identified as a threat to humanity!

The new strain of coronavirus, spreads from person to person with droplets, but mainly with the "volatile" microparticles that have a long range in closed rooms (e.g. lifts), can remain in the air for more than 15-20 minutes from coughing or sneezing and symptoms usually appear within 2-5 days, with a maximum duration of onset of around 14 days from the day of infection.

According to estimates, each patient infects 1.4 - 2.5 other people, while compared to the seasonal H1N1 flu, each patient infects an average of up to 1.3 other people. Symptoms of infection in cases that require hospitalization include fever, cough and respiratory distress, while chest X-rays show very serious and very often irreversible lesions in both lungs.

At present, specific antiviral therapy for the new coronavirus infection has not yet been developed.

However, at least 70 drugs are being studied in clinical trials and their results are expected to be announced soon.

So far the proportion of deaths compared to confirmed cases is very low, less than 2%, meaning less than 2 per 100 coronavirus patients die, a much lower rate than in the past with SARS and MERS. In fact, mortality may be lower, as many patients with mild symptoms may not even have contacted the health authorities and therefore it has not been possible to be counted officially. Most victims of the new coronavirus and the viral infection it causes, SARS-CoV2, are over 60-62 years old with other pre-existing health conditions and general underlying diseases.

There is no vaccine available for the new coronavirus, but some clinical trials are already nearing completion and it is estimated that it will be available in the coming months. However, as long as there is no vaccine available, it is very important to implement the measures to prevent the spread of the disease: the measures of personal hygiene, social distancing and especially the use of a protective mask!

Coronaviruses get their name from a characteristic corona-like viral particle that forms small, horn-like protrusions around their surface. This family of viruses infects some vertebrates, mainly mammals and birds, and is considered one of the leading causes of viral infections of the respiratory system.

With the recent discovery of the new coronavirus, SARS-CoV2, there are now a total of 7 known coronaviruses that can infect humans:

Prior to the SARS-CoV outbreak in 2003, the HCoV-229E coronavirus and the HCoV-OC43 coronavirus were the only known coronaviruses that could infect humans. Following the SARS epidemic, 5 additional coronaviruses were discovered that could infect humans, most recently the new COVID-19 coronavirus. SARS-CoV and MERS-CoV coronaviruses are highly pathogenic to humans and are associated with high mortality rates.

Virology and SARS-CoV2

Coronaviruses belong to the Coronaviridae family and Orthocoronavirinae subfamily. The coronaviruses are surrounded by a capsule, contain a positive polarity single-stranded RNA genetic material and have the largest genome of all RNA viruses to date. Two-thirds of the coronavirus genome encode viral proteins involved in viral RNA transcription and replication, while the rest encodes structural proteins of the virus and special support proteins for its growth.

The major proteins in coronaviruses are called protein S (Spike), protein E (Envelope), protein M (Membrane) and protein N (Nucleocapsid). These proteins, which are biomarkers, play an important role not only in how the disease is diagnosed, but also in how we understand the pathogen profile of the coronavirus and ultimately how the molecules are selected to be used for vaccine and specialized antiviral therapy.

The SARS-CoV and MERS-CoV coronaviruses are believed to have been transmitted to humans by bats. But while coronaviruses have evolved for thousands of years remaining into bat populations, intermediate mammalian hosts such as the muskrat and bat in the case of SARS-CoV and the camel in the case of MERS-CoV can also get infected and possibly play a significant role in transmission of these coronaviruses in humans.

It is highly suspected that the COVID-19 pandemic began at the Huanan Seafood Market in Wuhan, China. However, this market may not be the primary source of viral transmission to humans, as bats are rarely sold in markets in China and more often sold directly in restaurants for quirky gourmet Chinese food.

The Pathophysiology of the new Coronavirus.

Coronaviruses mainly infect the upper respiratory tract and the gastrointestinal tract of birds and mammals. The surface glycoprotein spike (protein S) is a key factor in the virulence of coronaviruses, as it is believed to allow them to attach to host cells. In SARS-CoV coronavirus, the Angiotensin 2 Converting Enzyme (ACE2) is the major cellular receptor and this plays a role in the ability of SARS-CoV to cause upper, but unfortunately also lower, respiratory tract infections that significantly contribute to the mortality rate of the virus. Similarly, the MERS-CoV coronavirus has been shown to bind to dipeptidyl peptidase 4 (DPP4), a protein that has been evolutionarily conserved in species known to host this coronavirus strain. While most respiratory viruses infect ciliated epithelial cells, DPP4 is expressed in non-ciliated airway cells in humans, a factor that appears to play an important role in the transmission of the virus and its high mortality rate.

The human Immune System in the fight against infections:

The coronavirus pandemic has highlighted the immune system as a protagonist for the good health of the world population, while among other things, we realized that the end result will not be judged so much by an effective treatment for COVID-19 but mainly by whether our body can resist the infection by the new Coronavirus, since any vaccine protects the body from possible infection only partially.

And now a little immunobiology, to expand knowledge

The immune system is supposed to be the body's impenetrable "armor", the system that protects against infections and potential diseases, severe and mild.

Through extremely complex and adaptive processes and biochemical processes, the healthy immune system works by protecting humans from infections, recognizing and neutralizing dangerous microorganisms, like commandos in a war. Yet another, equally important role of the immune system, is that it is able to "build immunity" so that when it encounters the would-be invader again, it can defeat it and eventually kill it faster, without us often realizing that something threatened our health.

The pillars of the immune system

The immune system works with the lymphocytes, which are the body's main guards and which first recognize the potential invaders. The skin, the largest organ in our body, is also a natural barrier and contributes to the smooth functioning of the immune system. Next, but equally important "player" is the digestive tract and the healthy gut microbiome, where the "battle cells" of the immune system circulate, communicate with each other, conveying the necessary information for the proper functioning of the body's defenses as a whole. In essence, however, the human immune system is directly connected to every organ and cell in the body and their proper functioning is interrelated with their own.

The secret of the immune system's battle

Its secret is precisely the complexity of the immune system and the levels of defense that it develops. Millions of cells organized into groups and subgroups carry information from one end of the body to the other. When a group of cells signals an alarm, these cells begin to produce powerful chemicals that allow them to grow, call on other defense cells for help, and join forces to neutralize the enemy as soon as possible.

Immune system and vitamin D.

The immune is a complex system and that's why it has many "allies" that contribute to its better and more efficient functioning. Vitamin D is one of these allies, protecting the body in many ways. This vitamin dynamically strengthens the body's immune response. It has anti-inflammatory and immunoregulatory properties and is of vital importance to the activation of the immune system's defense. Extensive research is being done on the vitamin's more specific actions, but there is some evidence that by investigating it, we are in the right direction.

The magical vitamin C is considered, perhaps, the main pillar of defense

Vitamin C is an antioxidant that helps prevent and treat many diseases. Many infections lead to the activation of phagocytes, which in turn release oxidizing agents, also known as reactive oxygen species (ROS).

Vitamin C deficiency can lead to reduced resistance to certain pathogens, while a higher supply boosts various parameters of the immune system.

The daily supply of the body with vitamin C, prevents infections and shortens the duration of the recovery.

It is a powerful promoter of healthy immune function.

See how:

1. Supports the production of interferons.

Interferons are produced when the presence of pathogens is detected. They facilitate the ability of cells to activate protective cellular defenses.

2. Enhances the function of phagocytes everywhere in the body.

Phagocytes are a type of white blood cells that surround pathogens and other dangerous particles. Once the invaders are "caught", they are digested enzymatically and neutralized.

3. Vitamin C is mainly found in white blood cells.

Some of these primary cells of the immune system contain vitamin C levels up to 100 times higher than plasma levels.

4. Improves cellular immune response.

There are 2 main ways the body can respond to a pathogen: antibody immunity and cellular immunity. The cell-mediated response refers to the activation of macrophages, natural killer cells, and antigen, especially T-lymphocytes that attack anything perceived as an invader.

5. Enhances the production of cytokines by white blood cells.

Cytokines are communication proteins that are released by certain white blood cells and transmit information to other cells, thus promoting the immune response.

6. Inhibits the apoptosis of various forms of T-lymphocytes.

T-lymphocytes are a type of white blood cell. They are an integral part of the cell-mediated immune defense system. Vitamin C helps keep these important cells alive and viable.

7. Supports the production of nitric oxide by phagocytes.

Nitric oxide is produced in large quantities in these cells, and is one of the factors that will kill the captured pathogens.

8. Enhances the production of T-lymphocytes.

These cells are essential for cell-mediated immune responses, and vitamin C helps them to multiply in number.

9. Increases the production of B-lymphocytes.

These white blood cells produce the antibodies as part of the antibody-induced immune response. These antibodies are formed in response to the initial introduction of an invading pathogen or antigen.

10. Inhibits the production of neuraminidase.

Some pathogens and bacteria produce neuraminidase, an enzyme that keeps them from being trapped in mucus, one of the body's natural lines of defense. By inhibiting neuraminidase, vitamin C helps to optimize this defense mechanism of the body.

11. Supports the production and activity of antibodies.

The proper functioning of antibodies is important for a healthy immune system.

12. Improves the activity of natural "commando" cells.

Natural killer cells are small lymphocytes that can attack cells directly, such as cancer cells, and kill them.

13. Favors the formation of prostaglandins.

Prostaglandins are hormones - compounds that control a variety of physiological processes, including the regulation of T-cell function.

14. Supports Cyclic GMP levels in lymphocytes.

Cyclic GMP plays a central role in regulating various physiological responses, including the modulation of immune responses. Cyclic GMP is important for the normal reproduction and differentiation (special purpose specificity) of cells. Cyclic GMP also controls the action of many hormones, and appears to mediate smooth muscle flaccidity.

15. Contributes to localized production and / or interaction with hydrogen peroxide.

Vitamin C and hydrogen peroxide can kill microorganisms and can dissolve the protective granules of certain bacteria, such as pneumococci.

16. A lesser known property of vitamin C is that it inhibits histamine.

This effect of vitamin C is important for supporting the immune system in local factors.

17. Vitamin C neutralizes oxidative stress.

18. Improves and enhances the immune response achieved by vaccination.

19. Enhances the mucolytic effect.

This property helps to liquefy the thick secretions, increasing the immune access to the infection.

20. It can make bacterial membranes more permeable to certain antibiotics.

Vitamin C is the strong supporter of the healthy functioning of the immune system.

Positive energy strengthens the immune system

Chronic stress overwhelms the body and causes malfunctions in all its systems. In addition to consciously trying to control it, positive energy can play a role in compensating for it and reversing its effects:

When we radiate positive energy, dopamine and other hormones are secreted in the brain that contribute to a better mood, thus reducing stress. It may not keep the doctor away on one hand, but on the other hand it can help the immune system function more efficiently.

Decrypting the new Coronavirus

There is still a lot to learn about SARS-CoV-2, but some new data come as a surprise to molecular biologists, who are essentially the ones fighting in laboratories to inform and guide infectious disease specialists, giving them new expertise in this virus and supplies to apply more effective techniques for its successful treatment. A recent study identified the characteristics of cells that are vulnerable to the virus, namely **the cells that the SARS-CoV-2 virus selects to infect and establish COVID-19 infection.**

Based on these data, it can be studied more precisely how the virus interacts with each different cell type in the human body. Thus, it begins to be understood why some cells are more sensitive and vulnerable and of course this information is useful in designing drugs that target the virus but also vaccines or other immunotherapeutic approaches, such as the use of selected herbs, for the application of which (in the fight against the pandemic we are experiencing) this book was written and we hope and wish it helps, since the most powerful weapon for the protection and promotion of health is knowledge.

The map of human cells

It would be inadmissible and a great omission not to mention at this point, the scientific study which was carried out by scientists in Boston, USA, in collaboration with many researchers from the USA, Europe, but also South Africa, who participated with their research and the data they produced, that gave a lot of research results and knowledge to the great work of the Human Cell Atlas.

This is a huge transnational research project that has created a comprehensive reference map of all human cells, with amazing details.

The creation of this detailed map is based on new technologies for the analysis of genetic material and especially RNA at the level of a single cell. This means that RNA is analyzed not in a mass of cells but in each cell individually.

All cells in the body have the same genetic material, the DNA, but each different cell type expresses only one part of this genetic material. This expression is done through RNA, which eventually translates into proteins.

So we have many different cell types, even at the organ level. RNA analysis at the single cell level allowed the mapping of gene expression and activities within each unique cell type.

The SARS-CoV-2 virus binds to a protein receptor, a protein found on the cell surface that recognizes certain proteins or other substances called angiotensin converting enzyme 2 (ACE2). This enzyme helps to dynamically maintain blood pressure and fluid and electrolyte balance. The SARS-CoV-2 virus uses the spike proteins on its surface to bind to ACE2.

However, this virus also uses a second enzyme to enter the cells. This enzyme is called TMPRSS2 (Transmembrane protease, serine 2) and although its full biological function is not fully known, it acts as an enzyme that “cuts” parts of certain proteins (like the protease enzyme) and appears to actually prepare and activate the spike proteins on the surface of SARS-CoV-2, so that it can bind to ACE2 containing cells.

Ultimately, it seems that both of these proteins are needed for the virus to enter the cells: one “sharpens” the tips of the virus so that the virus can bind to the other. The cells that express both are of course the most sensitive and vulnerable.

How the coronavirus affects the different organs of the body

Based on what was already known about the symptoms of COVID-19 in the lungs, nasal passages and intestine, let's focus on the hundreds of different cell types that have been identified in these organs. The processing of the data was focused on the cells that express the two primary proteins that the virus needs, namely ACE2 and TMPRSS2.

In the nasal chambers, the cup-shaped mucosal cells were those that showed high expression of both proteins. In the lung, ACE2 and TMPRSS2 were highly expressed in cells called Type II Alveolar cells. These cells line the alveoli which are the small air pockets (something like small bubbles) where the gases are exchanged inside the lungs and make sure that they remain open and do not close.

In the intestine, on the other hand, ACE2 and TMPRSS2 showed high expression in nutrient-absorbing enterocytes. These findings are consistent with the symptoms of coronavirus infection with nasal congestion, anosmia (loss of smell), pneumonia and diarrhea.

However, the analysis of the data showed some even more new and interesting elements.

In these cells, which cover the respiratory tract and intestine, the activity of the gene encoding the ACE2 protein appeared to increase significantly along with the activity of other genes known to be activated by interferon.

But interferon is a protein produced by the body's cells in response to viral infections, i.e. it is one of the first lines of defense against viruses. To prove this, molecular biologists exposed lung cells to interferon and found that they did express increased amounts of ACE2. Previous studies have shown that the ACE2 protein helps the lungs to cope with damage from exposure to various toxic agents (germs, tobacco, viral infections, particles, etc).

To date, however, the link between ACE2 expression and interferon, the body's main antiviral protein, has been missed.

This finding suggests that SARS-CoV-2, and possibly other coronaviruses that are based on ACE2 to invade cells, may benefit from the natural immune response. In other words, when the immune system responds to the virus by producing more interferon, this results in the production of more ACE2 on the cell surface (lung, nose, intestine), resulting in increased SARS-CoV-2 binding sites and its ability to adhere to cells. Although much more research is needed, these findings suggest that possible use of interferon as a treatment for COVID-19 should be done with extreme caution to avoid adverse effects.

Interferon is a drug that has been used for several decades to treat viral infections, such as hepatitis viruses, and as an immunotherapy for malignancies.

The second wave of the coronavirus pandemic has caused global concern and uncertainty.

The best way to protect yourself from the deadly virus is to boost your immune system.

The immune system plays a very important role in the fight against pathogenic microorganisms such as viruses.

Of course, a prerequisite for a strong immune system is good health, as well as factors such as age, diet and lifestyle in general.

One way to boost the immune system is to use anti-viral herbs that actively and effectively prevent the growth of viruses within the human body.

Anti-viral herbs fight viral infections, strengthen the immune system and greatly benefit the body's cardiovascular, digestive and other vital systems.

Their effect is due to the phytochemicals they contain and their anti-viral, antioxidant and anti-inflammatory properties. Most of them are consumed as delicious decoctions!

How does the new coronavirus attack human cells?

The major binding method as already mentioned is the type 2 angiotensin converting enzyme receptor (ACE2) which is found in addition to the airway epithelial cells, in gastrointestinal cells. It normally binds to the hormone ACE2, leading to vasoconstriction and an increase in systolic blood pressure. This is the main reason why people with cardiovascular disease belong to the vulnerable groups, since the drugs they take to regulate hypertension target this receptor.

Prescription drugs are usually ACE2 inhibitors and so these receptors are free to bind to anything else that looks like angiotensin, such as the coronavirus. Mutations in this spike protein, as well as the differentiated state of respiratory epithelial cells, make this virus up to 1000 times more contagious than in 2003 SARS.

Once attached to a human cell, the coronavirus activates the furin enzymes that our body normally has to fight various pathogens, thus breaking its capsid and further activating the body's natural immunity, i.e. when the immune system responds directly when it understands that there is an infection.

During this reaction, a substance that initially aims to fight inflammation, the inflammatory NLRP3, is released but could create new ones as it sequentially leads to the release of proinflammatory cytokines. This immune behavior is linked to the development of other diseases or syndromes, such as diabetes, atherosclerotic plaque and Alzheimer's disease.

It can, on one hand, protect the human body from the invasion of pathogens. On the other hand, however, it leads to an overreaction, resulting in the collapse of internal organs. COVID-19 disease encodes some proteins that facilitate the release of viral particles from the cell. These then further activate the release of NLRP3 inflammation and thus the patient gets worse. This is the famous "cytokine storm" that literally exhausts many patients with COVID-19 and lead many of them even to death.

An unexpected ally

How can the human body be better prepared for the coronavirus? Could we control the inflammation and protect the body from reacting against

itself? Based on this reasoning, scientists from different parts of the world are looking for new allies in nature itself, as we saw above with the example of melatonin. However, it is not the only substance that can inhibit NLRP3 inflammation and “calm down” the cytokine storm triggered by the coronavirus. Similar proposals are in progress on the administration of vitamin C megadose.

Also, the inflammation that causes the “cytokine storm” is activated by the destruction of mitochondria, the growth of free radicals and the destruction of lysosomes. So by making the destruction of these particles milder, we can expect that a body that will get COVID-19 will have a milder immune response. In this light, it would be worthwhile to study the effect of herbs and vitamins that have these goals, without activating cytokines.

This category includes foods and substances from nature such as **oregano or mallow, lavender, ginger, rosemary, wild mountain tea, licorice root, Alpine lady's mantle, marjoram, taraxacum, black elderberry, honeysuckle, astragalus, cat's claw, cistus, teucrium, wild sage, wild rose, pineapple, orange peel, zinc (tested also in relation to the coronavirus of 2003), vitamin A, vitamin D and vitamin C.**

So if someone is at risk of becoming infected with the virus, a well-regulated immune system may prevent them from getting sick, or if they do not avoid it and get sick, they may get through it milder. And that would not be a negligible benefit at all.

Herbs in the fight against dangerous viruses / infections that threaten our health... even our lives.

The second wave of coronavirus pounds us with quite a lot of intensity - with greater intensity than the first time, while the summer comes to an end - with the result that the seasonal flu and coronavirus work together to make our life even more difficult. Then the annoying cold, the flu and the Coronavirus will confuse us a lot and we will not know where and what is hitting us!

Can we treat them without drugs? Of course, this is something that only the doctor and no one else will judge.

But we may be able to preventively protect our body and immune system from the attacks of these uninvited guests or alleviate their annoying symptoms by using certain herbs that each of us can easily find on the market, or collect from the countryside, or even better to use them in the form of decoctions.

Herbs inhibit the growth of viruses, while many of them also strengthen the immune system, which fights pathogenic viruses. This can be even more effective as pathogens mutate over time and become less prone to treatment. In addition, these herbs offer other health benefits, such as to the

cardiovascular and digestive systems, while providing an anti-inflammatory shield.

I have already said and I will repeat that the use of herbs does not in any way replace the medication that will be given by the therapists in case an infection is diagnosed and their use must be done carefully and according to the instructions for use of the preparations!

There are more than 400 different viruses that can cause dangerous infections (including the common cold) like the flu, hepatitis, mononucleosis, HIV and most recently the new coronavirus, SARS-CoV2!

Today, many people choose to be vaccinated against various viruses, but any vaccination is effective only to some extent. Fortunately, nature has endowed us with quite powerful antiviral herbs that strengthen the immune system and fight inflammation and infection.

The virus is a small infectious agent that can only be reproduced in the living cells of other organisms. Viruses can infect all forms of life; humans, animals, plants and microorganisms, including bacteria. They are found in almost all ecosystems on Earth and are the most abundant biological species.

Viruses are thought of as being in a gray area between living and nonliving because they carry genetic material, reproduce and evolve through natural selection, as a living organism would do, but do not have the cellular structure necessary to make them living organisms. A virus spreads throughout the body in a variety of ways. In animals, the virus is transmitted by blood-sucking insects, while other viruses, such as the flu, are transmitted by microparticles through the air and by touch, that is when we touch an infected surface and then touch the mucous membranes of the mouth, nose or eyes.

Somehow the wealth of the Greek nature along with some herbs that grow outside of Greece becomes a modern "shield" against the flu and cold, reducing the recovery time by half.

Greek biologists are following in the footsteps of Dioscoridis, Asclepius and Hippocrates, by making use of the best 20 healing herbs, mainly from Greece, and created a powerful ally in the protection against respiratory infections - a powerful herbal cocktail.

The twenty herbs of the natural preparation in the form of a decoction created by Greek biologists, ensure us a faster recovery from all seasonal infections. At the same time, they protect us from the infection with the flu viruses and rhinoviruses of the common cold, which are extremely contagious, but also of the new visitor who came to us from Wuhan, China, the new SARS-CoV2 coronavirus, which has upset the planet, destroys economies and reaps human lives!

The findings of the research were so impressive that interest in this particular Greek tea / decoction was shown by well-known European research centers,

including it in non-pharmaceutical means for the treatment of respiratory infections.

The active ingredients of this Greek tea / decoction come from 20 known antiviral herbs that are collected at specific times and in specific areas, in order to have the maximum possible concentration of antiviral substances.

The research of the Greek biologists research team proved that the timely intake of the herbal decoction prepared from the early symptoms of the virus for seven consecutive days significantly reduces the recovery time and the remission of the flu symptoms.

It has a similar effect against the rhinovirus of the common cold, as it drastically reduces the viral load and the multiplication of the genetic material of the viruses that cause the infection. Its preventive administration, before contact with the viral agent, is also being studied with promising findings. It has been found that preventive administration of this decoction for 5 to 10 days before contact with viruses, significantly reduces the risk of infection and disease.

The development and consolidation of the antiviral infusion in the field of antiviral nutrition and the natural preparations of nature's pharmacy, advertises the scientific potential of Greece abroad in the best way and helps to get rid of the suffering of dangerous infections, such as COVID-2 that has panicked the whole planet!

A few words about the antiviral decoction of 20 herbs

It's a homogeneous mixture / recipe from ground herbs (coarsely ground under the type of oregano - granule) which with boiling water is made into a decoction (herbal tea). It helps to have a strengthened immune system, to protect against all airborne viruses and, even if for any reason we get sick, to be able to get through the virus with very mild symptoms as the mixture strengthens specific organs and systems in the human body.

The dried herbs we have chosen are put separately in a professional mill so that we have them in the form of granules, that is in the form similar to grated oregano, so that we can easily weigh them and mix them all together (by % proportion individually) in a homogeneous mixture.

From this mixture of herbs, a quantity of 3 grams in 330ml of boiling water (a cup of tea) for 10 minutes gives us a cup of tea drink with a unique combination of all the beneficial substances that each herb has separately and all of them together.

Systematic daily consumption of 3 cups of decoction shields our immune system aimed at treating airborne viruses and strengthens all vital organs and vital systems that can be affected by these viruses so

that even if the body becomes ill from the intake of large viral load, it becomes able to cope and get through the virus with very mild symptoms.

COMPOSITION:

- 1). Oregano (*Origanum vulgare*)
- 2). Mallow (*Malva sylvestris*)
- 3). Lavender (*Lavandula*)
- 4). Ginger (*Zingiber officinale*)
- 5). Rosemary (*Salvia rosmarinus*)
- 6). Mountain tea (*Sideritis*)
- 7). Liquorice (*Glycyrrhiza glabra*)
- 8). Alpine lady's mantle (*Alchemilla alpina*)
- 9). Marjoram (*Origanum majorana*)
- 10). Dandelion (*Taraxacum officinale*)
- 11). Black elderberry (*Sambucus nigra*)
- 12). Manna ash (*Fraxinus ornus*)
- 13). Astragalus (*Astragalus*)
- 14). Cat's Claw (*Uncaria tomentosa*)
- 15). Rockrose (*Cistus*)
- 16). Teucrium
- 17). Wild Sage (*Salvia pomifera*)
- 18). Dog Rose Enclosures (*Rosa canina*)
- 19). Pineapple Powder (*Ananas comosus*)
- 20). Orange Peel (*Citrus x sinensis*)

It's an orange flavored mixture.

Method of preparation: 3 grams of herbal mixture for 7 - 10 minutes in 330ml boiling water in 80° C (one cup of tea)

Recommended consumption:

Three (3) cups of tea a day (or at least two) continuously for two months, one month break and start again for another two months.

PROPERTIES OF THE ANTIVIRAL MIXTURE HERBS

01. Oregano (*Origanum vulgare*)

Abundant source of many nutrients such as vitamin K, vitamin C, vitamin A, manganese, iron, calcium, carotene, lutein, zeaxanthin and cryptoxanthin. Contains pinene, limonene, ocimene, caryophyllin (active ingredients of oregano essential oil), ursolic acid, caffeic acid (polyphenol that effectively inhibits tumor growth) and rosmarinic acid (antioxidant with also antibacterial action).

It also contains two antioxidants, thymol and carvacrol, which have been shown to inhibit the growth of *Pseudomonas aeruginosa* and *Staphylococcus* bacteria while helping to prevent cell damage caused by free radicals.

It has antiseptic action in the lungs, lung tuberculosis and asthma, analgesic effect in acute or chronic rheumatism, expectorant action (liquefies phlegm), and is useful especially in chronic bronchitis and pertussis.

A study showed that oregano essential oil helped inhibit the growth of *E. coli* (*Escherichia coli*) and *Pseudomonas aeruginosa* while another study found that oregano is effective against 23 species of bacteria.

A study by the University of Arizona concluded that the carvacrol contained in oregano can fight Norovirus. Norovirus is the most common cause of viral gastroenteritis epidemics in children and adults. Carvacrol strips the virus of its "armor" (a protein hard outer coating), making it more vulnerable and easier to destroy.

The study's lead author, Dr Kelly Bright, said: "Carvacrol could potentially be used as a food disinfectant, as well as a surface disinfectant, in combination with other antimicrobials. Further studies are needed, but carvacrol has a unique way of attacking the virus, which gives it a very interesting perspective". Experiments have shown that carvacrol acts directly on the capsid, the hard protein shell of the virus, which contains its genetic material. That is exactly why scientists estimate that the virus is unlikely to develop resistance to it. If used as a disinfectant, it will be long-lasting, non-corrosive, fume-free and safe, experts say.

The results of the study were published in the Issue 5, Volume 116, May 2014 (Pages 1149-1163) of the Journal Of Applied Microbiology.

02. Mallow (*Malva sylvestris*)

The plant contains flavonoids and mucilage. Its flowers are rich in anthocyanocides. It also contains vegetable mucus, essential oil and traces of tannin while it is also rich in protein, iron, minerals and vitamins A, B and C.

It has soothing properties and helps treat coughs, inflammations of the skin, the eyes, the respiratory, urinary and digestive systems.

It is recognized as an effective herbal remedy for colds and asthma. Its leaves and flowers have strong anti-inflammatory properties. In addition, the seeds contain sticky substances that cover the inflammatory tissue, forming a protective layer that allows the tissue to heal. It seems to be particularly effective in treating inflammation and irritation of the mouth and throat, as well as in relieving cases of dry cough.

It is generally proven to be expectorant, astringent, anti-inflammatory and suitable for treating bronchitis, runny nose, cough, pneumonia.

03. Lavender (*Lavandula*)

With 150 active ingredients it is considered as one of the super herbs that can prove valuable for our health. Linalool and acetate are the two main components of the essential oil with a combined percentage of more than 60% (v/v), while other components that were detected are geraniol, eucalyptol, camphor and others.

Main properties:

A. Antimicrobial. Neutralizes streptococcus and pneumococcus. It is effective against diphtheria, bronchitis, tuberculosis and typhoid.

B. Antispasmodic, analgesic. Action against irregular cough, asthma, pertussis, flu and laryngitis. Relieves muscle, neuralgic and rheumatic pains.

Relieves migraines and dizziness. It has an expectorant effect (regulates the secretions of the bronchi).

C. Tonic, invigorating. Due to its rejuvenating action, it is suitable for hypotensive patients and especially for those who are fatigued suffering from various viruses.

04. Ginger (*Zingiber officinale*)

Ingredients of the plant are carbohydrates with amyl as the main ingredient, various lipids (eg palmitate, oleic, linoleic, capric, stearate, linolenic, arachid, triglycerides, phosphatidic acid, lecithins, A, B and C ginger-glycolipids). It also contains oleoresins, ginger bonds (including lateral methyl chain derivatives), shogaol bonds (which are dehydrating products of ginger oils), zingerone (gingerols degradation derivative) and others.

The essential oils contained in ginger are β -bisabolene and zingiberene, zingiberol, zingiberenol, α -curcumene, β -sesquifellandrene, β -seskifellandrol (cis and trans) and numerous monoterpene hydrocarbons, alcohols and aldehydes.

Other components of the plant are various amino acids (eg arginine, aspartic acid, cysteine, glycine, isoleucine, leucine, serine, threonine and valine), proteins, resins, diterpenes (galanolactone), vitamins, especially nicotinic acid (niacin), vitamin A and minerals.

It has antioxidant, anti-cancer and immunoregulatory properties. Reduces blood cholesterol levels, regulates blood sugar and has a healing effect, helps good digestion, fights nausea.

It has significant antipyretic and antimicrobial action while stimulating the body and relieving the symptoms of colds, stomach aches and headaches. Many scientists believe that ginger helps reduce arthritic discomfort. Nevertheless, even more studies are needed to confirm its possible effects in the treatment of osteoarthritis.

Thanks to its anti-inflammatory and antibacterial action, it reduces fever, nasal congestion and joint pain caused by the flu while also reducing the pressure on the chest caused by the accumulation of mucus. This also applies to those suffering from sinusitis and nasal congestion. It also cures chronic fatigue syndrome resulting in a stimulation of a weak and tired body.

Ginger stimulates many secretion glands in the body. Increases the secretion of saliva in the mouth, from the salivary glands, as well as the secretion of bile.

05. Rosemary (*Salvia rosmarinus*)

It contains flavonoids (diosmetin, diosmin), phenols (caffeic acid, chlorogenic acid), while its essential oil has terpene hydrocarbons, α - and β -pinene, camphene, camphor in a content of 20-50%, cineol, borneol and esters, as main components.

It is expectorant and helps with cough, asthma, bronchitis and flu, stimulates blood circulation to the brain, against fainting and dizziness,

helps with fatigue and weakness, is considered antibacterial, antifungal and cardiogenic. Very effective against chronic lung catarrh as well as antirheumatic.

06. Mountain tea (*Sideritis*)

From studies that have been conducted, it has been shown that its primary active ingredients appear to be phenolic acids without containing any caffeine.

It is extremely effective in the treatment of colds, nasal congestion, respiratory problems and persistent cough, possible pharmacological properties such as anti-inflammatory, analgesic and antioxidant, to a degree equivalent to green tea, antimicrobial effect but mainly anti-microbial of the fungus *Candida Albicans*, while the Evia tea showed activity against specific microbes, analogous to the antibiotics ampicillin and amikacin.

With its strong anti-inflammatory, anti-hyperglycemic and antimicrobial properties, it is a gift of nature for our health. Its main initially detected property was the action against gastritis and inflammation of the mucosa, while we now know its beneficial properties in supporting the upper respiratory system.

07. Licorice (*Glycyrrhiza glabra*)

It contains triterpenoid saponins such as glycyrrhizin 6% (which is 50-60 times sweeter than granulated sugar), flavonoids, sterols, polysaccharides, coumarin and asparagine. It also contains glycyrrhizic acid, combined with calcium and magnesium salts as well as steroid hormones (estrogens) that activate the operations of the ovaries.

It has anti-allergic action, immunosuppressive corticosteroid-mimetic action, expectorant, sedative, antispasmodic. It's indicated in cases of bronchial rheum and bronchitis. It has an astringent effect and in large actions it functions as a wormicide, helps with respiratory problems such as asthma, cough and bronchitis, pneumonia and pleurisy, as it has expectorant and antispasmodic properties.

It has effective antimicrobial properties against *Staphylococcus* (*Staphylococcus aureus*), *Streptococcus* (*Streptococcus mutans*), *Mycobacterium* (*Mycobacteriumsmegmatis*) and *Candida albicans*.

Licorice even fights drug-resistant viruses. The strong anti-viral properties of licorice are not limited to coronaviruses, they have also been studied in connection with another epidemic / pandemic, a severe and potentially deadly one, the influenza virus.

08. Alpine lady's mantle (*Alchemilla alpina*)

Alchemilla contains tannin, salicylic acid and essential oil, astringent, diuretic, cardiogenic, antidiarrheal, wound healing, wound, ulcer and infection, antianemic and muscle tonic.

It is an anti-inflammatory herb, rich in tannins. Ideal for treating inflammations and infections, it regulates normal blood flow both in cases where the blood flow is lower than normal (amenorrhea) and in cases where the blood flow is particularly high. The salicylic acids it contains have soothing properties. In addition to protecting the body by maintaining blood pressure within normal limits, it also ensures the proper oxygenation of the body through the normal flow of blood to all blood vessels.

09. Marjoram (*Origanum majorana*)

Marjoram is one of the most powerful sources of natural antioxidants, and is also used as a medicinal herb.

The active ingredients it contains are the essential oil, which consists of savinene hydrate, linalool, carvacrol and other terpenes, flavonoids, caffeic and rosemary acid and triterpenoids.

It also contains thymol, volatile oils, astringents, bitter substances and 40% fiber. It also contains a number of nutrients, such as vitamins, minerals and trace elements. Its vitamins are vitamin C, A, K, β carotene, B6, folic acid and niacin. Its minerals and trace elements are iron, phosphorus, potassium, manganese, calcium and zinc.

It's recommended for rhinopharyngitis and pharyngitis, has expectorant, antispasmodic and tonic properties, used for bronchitis and asthma as well as for rhinitis and tonsillitis.

It is very good for headaches and insomnia, vertigo, migraine, memory loss and epilepsy, while other researches provide a basis for the traditional use of marjoram in the treatment of cardiovascular disease and thrombosis.

Not suitable for consumption during pregnancy and lactation. In small doses it acts as a sedative.

10. Dandelion (*Taraxacum officinale*)

Taraxacum provides the ingredient lecithin, a type of fat also found in eggs, beans and seafood that has been used to treat gallbladder and Alzheimer's diseases. Also, the leaves of taraxacum are rich in iron, potassium, folic acid, magnesium, phosphorus, vitamins C, K, B1, B2 and B6, as well as calcium and manganese. A large amount of soluble fiber is found in the roots of the plant, which helps to balance the bacteria in the intestine.

Tea is usually the drink we choose to relieve the cough caused by respiratory infections, but also to boost our body's hydration levels in order to help our immune system fight any infection. Taraxacum tea in particular also helps to remove accumulated toxins and reduce inflammation in the body, thus speeding up recovery.

It's characterized as a superfood. An herb with high levels of vitamin B6, C, iron, magnesium and potassium, with great anti-inflammatory,

antioxidant and antifungal properties, which if included in the daily diet will give the maximum of everything it promises.

Taraxacum is one of the safest herbs without side effects.

11. Black elderberry (*Sambucus nigra*)

It contains more potassium nitrate than any herb and is rich in many vitamins (mainly A, B, C). Its fruits contain amino acids, bioflavonoids, flavonoids, carotenoids, sugar and tannins.

The main and well-known property is the treatment of the symptoms of the dangerous seasonal H1N1 flu. It has been studied many times for its anti-inflammatory, antiviral and antimicrobial properties, making it the ultimate herb for strengthening the immune system and treating colds and viruses during the autumn and winter months.

In short, it seems that its use helps

- fight infections
- fighting coughs, colds and flu
- treat sinusitis
- recover faster from viruses and microbial infections
- reduce fluid retention and edemas
- reduce inflammation of the upper immune system as well as reducing symptoms.

Helps treat colds, treat sinusitis and reduce congestion of the respiratory system, significantly increasing body sweating. It can be very well combined with antibiotic treatment.

Its consumption significantly reduces both the symptoms and the recovery time from the flu (both type A and type B). The leaves act as an external emollient and healing, internal laxative, expectorant, diuretic, antiperspirant and anti-catarrhal. They are very good for treating colds and flu, sore throat, toothache, whooping cough, tonsillitis and pharyngitis. They are also suitable for any upper respiratory system catarrhal inflammation.

12. Manna ash (*Fraxinus ornus*)

The bark of the young branches is rich in tannin, polyphenols and coumarin. All three ingredients are known for their anti-inflammatory and analgesic action, it has healing and antipyretic properties.

It also contains fraxin, fraxetol, rutin (glycosides), carbohydrates (amyl), resins, malic acid.

The seeds and leaves contain compounds that have antiseptic, antiviral and antifungal action. There are indications that ash may fight inflammation, hypertension and ulcers. The **manna** obtained from the trunk has a diuretic, mild laxative and mainly tonic effect.

13. Astragalus (*Astragalus*)

It is rich in saponins, also known as astragalosides, polysaccharides and flavonoids, such as quercetin and in phytosterols, elements that give it many properties.

Like many herbs, astragalus has many properties that distinguish it as an herb with adjuvant, diuretic actions as well as many more.

According to studies, astragalus has the ability to enhance the action of the immune system, as it affects the ability of T-lymphocytes and the body's immune response. It is therefore used to strengthen the body and treat colds and viral infections, especially the upper immune system and bronchitis.

Its composition in polysaccharides and saponins gives it a strong anti-inflammatory effect. As inflammation, and especially chronic inflammation, is the basis for many chronic diseases its role in the treatment and prevention of cardiovascular disease, diabetes and even cancer is being studied, by inhibiting inflammatory reactions.

14. Cat's Claw (*Uncaria tomentosa*)

A climbing plant that is found in the rainforests of Peru and Brazil, named like that because its thorns are in the shape of a cat's claw.

Cat's claw is a proven anti-inflammatory. Numerous studies have shown that it stimulates white blood cells to fight infections, while an Italian study showed that the cat's claw substantially reduced the ability of two viruses to cause infection. The cat's claw derives its antibacterial and anti-inflammatory abilities from the many phytochemicals it contains which act therapeutically on the body. Quinobic acid glycosides cool inflammation and alkaloid oxyndoles and proanthocyanidins boost the immune system.

The alkaloids that are present in this herb, strengthen our immune system, increase the ability of white blood cells for phagocytosis and capture, absorb and thus destroy any invader (germ, virus, cancer cells, etc).

Cat's claw also contains sterols, which are chemical compounds that act as steroids in the body, and can also be used to treat arthritis.

Numerous beneficial phytochemicals have been found in the plant: glycosides, alkaloids, proanthocyanides, polyphenols, triterpenes and the plant sterols beta-sitosterol, stigmasterol and campesterol.

It also contains alkaloid oxyindoles, which have a particularly tonic effect on the immune system. Only small amounts of these alkaloids are enough to boost immunity by 50% and have a therapeutic effect on tumors and leukemia.

The immune-boosting properties therefore make this tropical forest plant an excellent choice as a protector and general supporter of the body's natural defense mechanisms.

Reduces inflammation, stimulates the immune system, kills viruses and helps protect against heart disease. Cat's claw can also prove to be an effective treatment for HIV / AIDS and some types of cancers.

15. Rockrose (*Cistus*)

The stem and leaves contain a balsamic resin fragrance, the labdanum. The resin contains organic compounds called lavanicaditerpenes, which according to studies have antimicrobial and cytostatic action (they prevent cell proliferation and ultimately prevent the formation of tumors).

Rockrose leaves have the highest polyphenol content of any plant in Europe, with an amazing ability to destroy free radicals, as well as high antioxidant action. The Lefo Institute in Ahrensburg, Germany came to the following conclusions after testing and research with the rockrose:

Rockrose tea is three times healthier than green tea. It is a powerful antioxidant (anti-cancer), tonic and soothing of the digestive tract, astringent, expectorant, anti-catarrhal, analgesic, antispasmodic, sedative herb and is also used for insomnia, stomach and intestinal problems, colitis, bronchitis, colds, detoxification and fungal infections.

It protects the heart four times better than red wine and is an antioxidant twenty times stronger than fresh lemon juice.

Rockrose contains an extremely effective combination of antioxidants: already a glass of concentrated tea has the same effect as a daily dose of vitamin C (as ascorbic acid).

Most striking is the fact that rockrose tea has a very strong antiviral effect on influenza and avian viruses (H1N1 and H7N7).

16. Teucrium

Contains monoterpenes (pinene, myrcene), sesquiterpenes (β -caryophyllene which is the predominant substance of its essential oil), diterpenes, phenolic compounds (tannins, coumarins, caffeic acid, tyrosol, ferrulic acid, etc), flavonoids (apigenin, quirsiliol, rutin, quirsimaritin, etc).

Ideal for respiratory diseases and skin problems, it is used for diabetes, coughs, colds, as an ulcer healing and against cholesterol. It is also considered as an excellent tonic.

Its anti-inflammatory and antibacterial action.

In related studies, the plant extract can reduce high blood glucose levels by enhancing insulin secretion by the pancreas.

In other studies, terpenoids and flavonoids have been isolated from the plant that have a wide range of pharmacological effects as antioxidant, anticancer, anti-inflammatory, hypoglycemic, hepatoprotective, hypolipidemic, antibacterial and antifungal.

17. Wild Sage (*Salvia pomifera*)

Sage contains volatile oil that contains 30% thujone, 5% cineole, linalool, borneol, camphor, salven and pinene, a bitter element, tannins, triterpenoids, flavonoids, estrogenic substances and resin.

This plant, which has a strong and aromatic smell and a warm, bitterish taste, contains 2% green essential oil, similar to that of absinthium, it also contains tanacetone and bitter substances such as picrosalvin, etc. Finally, 1 kg of sage extract contains 6000 international estrone units.

The leaves have antiseptic, expectorant, antispasmodic, stomach, tonic and cardiogenic properties and are also used against neuralgia.

Sage is used in therapy in the form of a decoction internally as an antiperspirant (especially against tuberculosis and neurotic night sweats).

As a decoction it is ideal for the treatment of the mouth in case of injuries, thrush, pharyngitis and against gingivitis.

Reduces intestinal gas, is a diuretic and emmenagogue, hemostatic, and local skin anesthetic. It has antibiotic, antifungal, antispasmodic and hypoglycemic action. Very effective against cough and sinusitis.

Excessive consumption of sage decoction is toxic to our body due to thujone. This substance, in addition to poisoning, can cause seizures, damage to the liver and nervous system.

Typical symptoms of sage poisoning are local skin irritations, intense and prolonged convulsions, stiffness of the upper extremities, degeneration of the liver and kidneys, etc.

18. Dog Rose Enclosures (*Rosa canina*)

Dog rose contains vitamins A, B, C, E and K, tannin, flavonoids (vitamin P), carotenoids (provitamin A), pectin, oils and organic acids.

It has a particularly high content of vitamin C, more than citrus fruits. It has an astringent (reduces the secretion of mucous membranes and fluids from the body) and tonic action (strengthens and empowers the organs, but also the whole body giving a feeling of well-being).

The decoction is considered an ideal tonic in infections of the respiratory system, in the cold, in atony and is considered a very effective antiseptic for infections.

The use of dog rose is contraindicated in thrombophlebitis or if we are predisposed to this disease.

19. Pineapple Powder (*Ananas comosus*)

Contains a variety of nutrients such as thiamine, riboflavin, vitamin B-6, folic acid, pantothenic acid (vitamin B-5), magnesium, manganese, potassium, antioxidants, polyphenols (such as β -carotene), vitamin C, zinc copper and folic acid.

Pineapple is the only known source of bromelain, an ingredient that breaks down proteins and reduces inflammation. The β -carotene contained in pineapple reduces the risk of developing asthma, and reduces its symptoms.

In addition to the above, the most interesting thing is that the pineapple fruit is rich in bromelain, which is a proteolytic enzyme with

several studies supporting a number of health benefits from its consumption. In particular, bromelain has the ability to survive by the proteolytic enzymes of the stomach and be absorbed while maintaining its function in the blood.

Therefore, bromelain has been shown to have the following benefits:

- Helps in the process of digestion, acting as a proteolytic enzyme. For the same reason, pineapple juice is often used in marinades as it helps to break down meat proteins and therefore makes it softer.
- It acts as an anti-inflammatory and for this reason it has been shown by some studies that it reduces pain in the joints and muscles, leading to an improved subjective sense of well-being. These findings may extend to people with arthritis.
- Helps reduce nasal inflammation, acting as a decongestant of the nasal cavity especially in cases of snuffle.
- Promotes cardiovascular health, affecting mainly the health of the arteries and not so much the heart tissue.
- Prevents muscle catabolism and cramps after exercise, while maintaining the production of work by the muscles.
- Finally, bromelain appears to have immunoprotective and anti-cancer properties.

20. Orange Peel (*Citrus x sinensis*)

Orange peels contain hesperidin. It is a flavonoid that has the ability to metabolize lipids in the blood. They have a high content of vitamins that protect the immune system from colds and viruses.

Rich source of vitamins, minerals and trace elements.

They are known for their content of vitamin C, which is a powerful antioxidant, helping to protect our cells from possible damage and strengthen the immune system.

They contain flavonoids.

These are compounds that promote health. Researches show that these phytochemicals of citrus fruits help to strengthen the human body and protect it from diseases such as cardiovascular disease and cancer while also having anti-inflammatory, antiviral and antimicrobial action.

They contain choline, zeaxanthin and carotenoids.

Choline is an important nutrient found in oranges that helps with sleep, muscle movement, learning and memory while zeaxanthin and carotenoids have antioxidant effects and have been proven to be inversely related to overall cancer rates and prostate cancer in particular.

In conclusion:

For all of the above and as the chief scientist of the research and empirical scientific team for the use of selected herbs in decoction, for the strengthening of the body against viral infections, I fully endorse!

It may be the most UNIQUE additional weapon against the pandemic in the world, without this in any way meaning that it replaces any medication prescribed by treating doctors!

Theodoros Giannaros

Geneticist, Molecular and Nuclear Biologist

Former Administrator of "ELPIS" General Hospital of Athens

Georg August Universität Göttingen

Karlsruhe University of Applied Sciences (Hochschule Karlsruhe – Technik und Wirtschaft)

University of Vienna (Universität Wien)

Harvard University / USA