

Vitamin D, the sunshine that helps prevent and fight cancer

“Let medicine be your nourishment, and nourishment be your medicine”, that is what Hippocrates had to say about diet therapy, and since he is referred to as the "father of medicine" why not explore what therapy through nutrition has to offer? Nowadays we can all agree that us, humans, fight in order to achieve the state of happiness. But, what is happiness without health? Science and pharmaceutical investigation have been evolving day by day, just to provide our kind with an enormous range of both chemical and natural medication. Such researches have led to the discovering of different molecules which have helped eradicate multiple illness. Nevertheless, there is a certain disease that still slips through our fingers... Cancer. What if while we are searching for a cure which helps bowl out cancer cells we fight it with natural molecules that can be found in our aliments, such as vitamin D?

On account of recent news provided by the National Cancer Institute (NIH) on April 2016, Vitamin D deficiency may promote spread of some breast cancers (1), therefore it has been chosen as an anti-cancer molecule.

Vitamin D, known by the scientific community as calciferol, which also receives the nickname of the sunlight vitamin, may sound strange if we relate it to cancer prevention and treatment, but it makes a wide effect on it. If we approach this subject, most of us would probably associate such vitamin to the absorption of calcium, in order to sustain the building of bone. However, we have to take into consideration that it takes a role in you nerve, muscle and immune systems. We are going to focus in the particular impact that this fat-soluble vitamin makes in the natural defences of our body and how it effects on cancer.

To start with, we have to set down what is the meaning of this disease. Cancer is a malignant neoplasm, commonly referred to as a tumour, which consists in the formation of a new tissue with and over-stimulated growth that takes place in an autonomous and independent way compared to the rest of the tissues. This abnormal growth also includes a perturbation of the biological functions of the cells. Moreover, this malfunction is really difficult to control, as the malignant cells have a speedy and erratic growing and they get the ability to disseminate thought blood vessels into different tissues causing metastasis.

What encouraged the oncological investigators to stablish what type of connection there is between vitamin D and cancer risk? Epidemiological researches showed that the incidence index and mortality in some cancers were lower in population that lived in southern latitudes, where the degrees of sunlight exposure are higher than those who live in northern latitudes. This is directly related to the fact that the main source of vitamin D in humans is the own production in skin directly exposed to the sun, so the hypothesis of how the variations in the concentration of vitamin D could be responsible of this association where made (2).

In addition to this, experimental investigations have suggested that there could also be an association between this vitamin and the risk of suffering cancer. Different cell studies and cancerous tumours in mice, have uncovered different activities that could reduce the growth rate of this cells and even inhibit the formation of neoplasms, such as promoting cell differentiation, stimulate the cellular death of cancerous cells known as apoptosis, and reduce the formation of new blood vessels that could help the dissemination of tumours (2). Therefore, if we intertwine the properties of a cancer cell with the effects that this vitamin can have over it, we can make two statements of the beneficial effects it has: first of all, the promotion of

apoptosis, which is essential in order to remove old and damaged cells. This mechanism is dodged by the cancerous ones, so calciferol is going to help us promote this procedure and inhibit the reproduction of the tumour. Second of all, a growing tumour requires a wide amount of blood, that is why new blood vessels are constantly appearing at the same time the tumour grows. This mechanism is called angiogenesis and it also stimulates the spread of the neoplasm through the nearest tissues and distant organs. Calciferol helps eradicate this process that is why it can also stop metastasis.

That being said, we need a source of obtaining this vitamin D, and the main one is exposure to direct sunlight. There is a huge controversy though, about exposing your skin to sun energy, because it includes ultraviolet rays that have the power to damage your skin, cause premature aging and to directly induce melanoma or others skin cancers, as it is known to promote carcinogen factors. That is why skin specialist recommend us to use solar filters that protect our skin as a barrier to this radiation. Nevertheless, there are still several risks if we over-expose ourselves to sunlight, so we need to find a balance in order to obtain enough vitamin D without stimulating cancer. What is more, there is a part of the population who lives in locations which receive poor sun exposure, and people unable to receive the direct sun rays, so they cannot depend on it to obtain enough vitamin. Here is where diet therapy makes an appearance: why not taking into consideration obtaining enough vitamin D concentration through nourishment?

We can use diet therapy to help our body prevent and fight against cancerous cells. It consists in including in our diets a series of aliments that contain Vitamin D. We should increase our intake of oily fish, which includes forage fish such as sardines, herring and anchovies, and other larger pelagic fish, such as salmon, trout, tuna and mackerel. We can also obtain this vitamin from eggs, milk and dairy products. That being said, the majority of vitamin D comes from other dietetic sources that are fortified with it, for example milk, juices and cereals. Furthermore, you can also increase the dose with dietary supplements.

Experts suggest the intake of 1.000 to 5.000 IU every day, or a single dose of 100.000 IU two times each month. IU stands for international unit, a unit of measurement for the amount of a substance. As it has been said earlier in the article, we need to seek for the balance of sunshine and diet therapy, so we have to take into consideration that with 20 minutes of sun exposure equals to obtaining 8.000 to 10.000 UI. If we rely on diet, fatty fishes that contains the highest amount of Vitamin D ranked are: cod liver oil (1.460 UI for every fool spoon), mackerel (345 UI for every 100 grams), sardines (270 UI for every 100 grams) and salmon (260 UI for every 100 grams). Other ailments that offer us this vitamin are milk (98 UI for every glass), and eggs (25 UI) (3).

According to all this research and recognizing that cancer, like other chronic diseases, can be prevented, we can follow dietary recommendations. On one hand, the Food and Agriculture Organization of the United Nations (FAO), released an information product in 2013 in which they established the conclusions that milk and dairy products probably protects against colorectal cancer and that there is limited evidence suggesting that milk protects against bladder cancer. This effect is due not to only vitamin D, but also Calcium (4). On the other hand, fatty fish contains higher amounts of this compound and it also provides high concentrations of omega-3 fatty acids, that reduce the multiplication of cancerous cells and help decrease the dissemination of tumours in their metastasis forms (3).

In addition, higher intake of food that contain substantial amounts of vitamin D, like the ocean fatty fish, was associated with lower mortality rates of colon and breast cancer in international comparisons, and of prostate cancer in cohort studies, according to the article The Role of Vitamin D in Cancer Prevention (5). Moreover, it has been discovered that Vitamin D deficiency is connected with increased risks of certain types of cancer such as colon, breast, ovarian, and prostate cancer. This creates a new impetus for ensuring adequate intakes of it to help reduce the risk of suffering from this disease (5).

Taking everything into account, we can conclude that we can rely on Vitamin D based diet therapy as a weapon in cancer prevention, as different studies encourage us to do. The variety of food that contains this vitamin, especially fatty fish and milk, offers us the possibility of obtaining the molecule without having to depend on sun rays, which is helpful for citizens of non-sunny locations or people unable to sunbathe. And last but not least, it gives us the power to help promote anti-cancer mechanisms, such as increasing apoptosis and decreasing angiogenesis. In the end, if we need food to sustain our lives, why not use nutrients as an ally in this physiological war?

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