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What we eat, how much we move and how well we sleep affects our infection risk

An author and expert in nutrition and exercise has spoken about the key things you should focus on in your diet to protect yourself against coronavirus, and the importance of exercise. Nick Dawson reports

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PROFESSOR Michael Gleeson, chairman in exercise biochemistry at Loughborough University, says key nutrients such as vitamin D and zinc can help limit the severity of Covid-19 infection, while regular exercise can help the body fight respiratory diseases.



Speaking to the Leicester Mercury, the author and expert, from Burbage, said: “In the past 12 months, we have all been told about some of the ways in which we can reduce our risk of picking up respiratory infections, particularly Covid-19.

“Social distancing, face masks and hand sanitisation have all become familiar terms. But there is more to learn as it has become clear that risk of serious health problems, respiratory failure and death following Covid-19 infection is more common in people who are overweight or unfit.

“So if that applies to you, it makes sense to try to lose some of those excess pounds by some sensible dieting and doing some more exercise, which will also improve your fitness.

“Our various lifestyle behaviours, including our daily exercise habits, diet and sleep quality, can also influence our infection risk and the health outcomes if we do become infected.

“They may also have an impact on our response to vaccination.

“Here, I explain some of the reasons and suggest some strategies to help people get through this current viral pandemic nightmare in a healthy state.

FOR STARTERS

“Emerging research on Covid-19 patients, and numerous previous studies relating to other viral respiratory infections, suggests key nutrients and supplements such as probiotics, selenium, vitamin D and zinc may boost your immune system if you are not already getting enough in your diet, limit the severity of coronavirus infection symptoms and even reduce intensive care admissions and mortality rates.

“Undoubtedly, the most important thing to help you maintain a robust immune system is to avoid any deficiencies of protein and essential vitamins and minerals.

“We can get all we need from a healthy, diverse and well balanced diet that is sufficient to meet our energy needs. Such a diet, containing meat, fish and lots of fruit and non-starchy vegetables will also ensure that we have a healthy gut microbiota which also helps our immune defences.

“Although the existing data requires further research, the results so far are promising: recent research studies indicate that patients who survived Covid-19 had higher levels of selenium – a nutrient found in eggs, liver, kidney, nuts, sardines and turkey – than those who died of the virus.

“Other studies have reported that healthy levels of zinc – a mineral found in cheese, meat, poultry, seeds and shellfish – are linked to higher survival rates.

“Several studies have reported that the vast majority of hospitalised coronavirus patients were deficient in vitamin D, which we gain mostly through exposure to the sun, which is compromised in the winter months when infection rates from respiratory viruses including Covid19 are the highest.

“And a few studies have now reported that daily consumption of probiotics reduced the severity of Covid-19 symptoms and cut mortality rates.

“Nutrition is very important, not only for ‘resistance’ in protecting you from getting respiratory infections like the common cold, influenza and Covid-19 but also for improving your ‘tolerance’ of it.

“Tolerance means a decreased infection burden when you get infected, so you could get less severe symptoms and recover more quickly.

“That’s the possible role of nutrition. We’re talking about compounds that are in our normal diet (or can be supplemented in tablet form) which may optimise the immune response or have beneficial anti-inflammatory or antioxidant actions.

“Unfortunately, it seems likely that nothing you eat is actually going to stop you contracting Covid-19.

“This virus is so contagious it seems to be able to easily bypass our immunity barriers. But a strong immune system will inevitably help you to fight it more effectively and be less susceptible to getting severe symptoms that can lead to death.

“We rely upon our immune response to respond appropriately when we get infected. And if you’re deficient in micronutrients like iron, selenium, zinc or vitamins C, D and E, it may increase your risk of severe symptoms.”

“Your body’s immune response to any virus requires a delicate balancing act: if your immune response is too low, your body’s defences will be overwhelmed.

“But if your immune response is too high, the defensive processes against Covid-19 can cause excessive inflammation, fluid accumulation in the lungs, breathing difficulties and multiple organ damage that can be fatal.

“Our immune system gets rid of viruses by seeking out your own cells which have become infected and destroying them, so there’s a real balance needed in your immune response.

“You want to be able to tolerate the virus, to some degree, in order to dampen your defence a little bit but still control the infection in order to reduce the risk of acute respiratory distress syndrome (when the lungs cannot provide the vital organs with enough oxygen), which can develop if you get too much inflammation in the lungs.

“So how might some of these key nutrients help your body produce the most appropriate immune response?

“Research suggests selenium (an essential cofactor for several enzymes important in antioxidant defence) helps to adeptly refine your immune response and you get less severe inflammation.

“There is evidence you also get improved proliferation of your lymphocytes (an important type of white blood cell), which help to activate the cell lines that specifically respond to a virus.

“Another essential mineral in our diet, zinc, is very important in helping to prevent viruses from proliferating.

“Viruses have a protective coat which surrounds their genetic material and the first thing they do when they get into your cells is un-coat themselves, release their genetic material and take over your own molecular machinery to help generate other viruses within your cells. But zinc helps to block that viral un-

coating, as well as inhibiting the enzyme which allows that genetic material to be reproduced in the cell, so it helps to prevent a virus from proliferating in your body, giving your immune cells time to respond and destroy it.

“Studies indicate taking a daily probiotic supplement can reduce the incidence of respiratory infections and reduce the severity and duration of symptoms if you do get infected.

“Vitamin D plays a key regulatory role in immunity. We know from studies on the common cold that with low vitamin D status you’re more likely to pick up respiratory viral infections.

“Although 10µg is the recommended daily dose, if you’ve not had much sun for months (like now in the winter) that’s not enough to get you up to the levels you want for optimal immune function, so I suggest a daily dose of at least 25µg or 1,000 IU (international unit) of vitamin D3.

“We can get most of the other immunity-optimising nutrients from our everyday diet. As well as the foods listed above, nuts, cod and wholegrains also contain selenium (the RDA – recommended daily amount – is 75µg for men and 60µg for women); beef, dairy and spinach also provide zinc (the RDA is 9.5µg for men and 7µg for women); and a healthy mix of fruit and vegetables will promote your population of healthy gut bacteria, which can be topped up with probiotics.

IMPROVING YOUR RESPONSE TO THE VACCINE

“Improving your diet may even help you get a better protective antibody response to your Covid-19 vaccine.

“We know with vaccines like the one for the influenza virus, selenium and vitamin D are linked to stronger antibody responses to the vaccination, and it seems likely that this will also be the case for Covid-19.

“And if lockdown and stress have been driving you to drink more alcohol, then beware: binge drinking has been shown to depress the functions of your immune cells.

“What about exercise, which if done regularly seems to protect against adverse health outcomes with Covid19 infection and can boost your antibody production in response to vaccination, particularly in the elderly?

“People who regularly engage in moderate intensity physical activities like walking, jogging and cycling are known to get fewer respiratory infections than sedentary couch potatoes.

“When we exercise we flush lots of additional white blood cells (WBCs) into our circulation from places where they are normally stored in the body: the bone marrow, spleen and thymus gland, and we also re-lease WBCs that have been stuck to the inner lining of our blood vessel walls.

“Some of the WBCs that enter our blood circulation during exercise are specialised T lymphocytes primed to fight infections and after exercise they move into our lungs, gut and lymph glands to seek out and destroy pathogens. So exercise essentially improves what we call immune surveillance.

REDUCING INFLAMMATION

“Another benefit of regular exercise and being reasonably fit is it helps keep us lean by burning calories and, most importantly, it dampens down inflammation – the thing that can generate severe health problems during Covid19 infection.

“In contrast, if you are sedentary and overweight your adipose (fat) tissue becomes inflamed and you develop what is called chronic (long-lasting) low grade inflammation which primes your body to produce an excessive proinflammatory response to infection and tissue damage.

“That is what you don’t want if you get infected with Covid-19. Exercise has various anti-inflammatory effects, which is one of the main reasons why exercise is also protective against the development of many chronic diseases including Type 2 diabetes, high blood pressure, coronary heart disease, dementia and several cancers.

“Enjoyable physical activity can also boost your mood, relieve depression and improve your mental well-being.

“So there you have it – what we eat, how much we move and how well we sleep affects our infection risk and our response to respiratory infections like Covid-19 (and others like influenza and the common cold).”