



Vidya Herbs Curcumin to spice up your immunity

Epidemics due to viruses have paved the history of humanity, leading mankind around the world to identify plants to fight them. The still progressing corona virus epidemic is demonstrating why stimulating our immunity should be a key factor of our own healthy lifestyle. Immunity, one of our main lines of biological defences, is mobilized to fight infection and infectious diseases or any undesirable biological intrusion. Recent scientific research highlights the potent activity of curcumin, the main active principle of turmeric.

It is interesting to notice that curcumin is not only stimulating the immune system, but it also exerts anti-virus activities, demonstrating *in vivo* activity against Dengue¹, Influenza A², Hepatitis B³ and Herpes Simplex⁴ viruses.

And now, with the COVID-19 pandemic, curcumin is presenting new and interesting potentials.

Curcuma longa (Turmeric)

Turmeric is no doubt the most known plant from Ayurveda. Its main component is curcumin, which is well-known

for its anti-inflammatory properties and has been shown to be a potent immunomodulatory agent.

How curcumin helps the immune system modulation

In response to infection, infectious diseases, or biological intrusion, our biological defences may fight by liberating cytokines. Because an uncontrolled cytokine liberation by the immune system may lead to the development of a lot of auto-inflammatory diseases, it is more rigorous to consider immune system modulation, than only immune system stimulation.

Known as a strong anti-inflammatory compound, curcumin can reduce the production of various proinflammatory cytokines including TNF, IL-1, IL-2, IL-6, IL-8, IL-12, and chemokines, most likely through inactivation of the transcription factor NF-κB. That is why curcumin anti-inflammatory profile that may be useful in both acute and chronic inflammation.

But curcumin can also modulate the activation of innate and adaptive immune cells such as T-cells, B-cells, macrophages, neutrophils, natural killer cells, and dendritic cells and can also interact with molecular components involved in the inflammatory processes, such as cytokines and various transcription factors with their downstream signalling pathways, as mentioned above. Interestingly however, curcumin at low doses can also enhance antibody responses⁵. *In vitro* and *in vivo* experiments showed that anti-inflammatory and immunomodulatory effects are combined by curcumin to sustain the immune system and all the curcumin health properties⁶.

Curcumin and pulmonary damaging viruses

Even if inflammation under physiological conditions is a protective mechanism, when the negative regulatory mechanism is suppressed, a persistent and extensive inflammatory response occurs, which can reach pathological levels causing fatal systemic damages. This triggered over-reaction of the immune systems may cause severe lung damages and acute respiratory distress syndrome resulting in mortality. The same damaging effects of this kind of immune over-reaction were observed in severe acute respiratory syndrome coronavirus (SARS-CoV) highly pathogenic avian influenza viruses and novel coronavirus (SARS-CoV2). This cytokine storm which results in acute lung injuries may be counteracted by curcumin due to its capacities to exert protective effects by regulating the expression of both pro-inflammatory and anti-inflammatory factors and by eliminating the reactive oxygen compounds that exacerbates the inflammatory response⁷.

Because of the great impact of the SARS-CoV2 on airways, curcumin has been considered on Nrf2 pathway. This nuclear factor erythroid-2-related factor



2 (Nrf2) has an essential protective role in the lungs against oxidative airway diseases. It has been recently published that curcumin could significantly increase its nuclear expression levels and promote its biological effects. The authors are expecting that curcumin may make a marvellous therapeutic candidate against a broad range of oxidative stress-related diseases, including type 2 diabetes, neurodegenerative diseases, cardiovascular diseases, cancers, viral infections, and more recently SARS-CoV-2⁸, the COVID-19 disease.

Curcumin and COVID-19

Since December 2019 and the first cases reported from Wuhan, COVID-19 has not received any treatment, and a lot of pharmaceutical molecules have been tested in vain. Due to its identified clinical effects such as antiviral, antinociceptive, anti-inflammatory, antipyretic, and antifatigue effects, curcumin could be effective to manage the symptoms of the infected patient with COVID-19. Due to its several molecular mechanisms including antioxidant, antiapoptotic, and antifibrotic properties with inhibitory effects on Toll-like receptors, NF-κB, inflammatory cytokines and chemokines, and bradykinin, curcumin could play an important role in the management of the disease^{9,10}.

In general, low levels or intakes of micronutrients such as vitamins and minerals have been associated with adverse clinical outcomes during viral infections. This notion has been confirmed in a recent review¹¹ which proposed that cer-

tain vitamins and certain minerals such as selenium, zinc and iron should be considered in the management of COVID-19 patients. Prevention, diagnosis, and treatment of malnutrition should be therefore included in the management of this disease. For that, the European Society for Clinical Nutrition and Metabolism (ESPEN) provided practical recommendations for nutritional management of COVID-19 patients¹².

Based on various immunity-boosting steps concerning Ayurveda, and the broad-spectrum of antiviral properties of curcumin, its combination with Zinc is hypothesised by some authors as a therapeutic approach of a nutritional complex with a concerted antiviral action¹³. Zinc in combination with polyphenols like curcumin may form ionophore complex that can boost individual immunity.

According to the hypothesis presented just below, it could be interesting to combine curcumin with natural zinc. Interestingly, Vidya Herbs also developed mineral from vegetable origin. Our extract titrated at 4% Zinc is obtained from Guava leaves (*Psidium guajava*) using a gentle water process. Around 300 mg of this extract allow to reach the daily recommended intake.

But other minerals are also interesting to support or boost our immune system such as Iron and Selenium that could also be combined with curcumin. The extract at 3% iron obtained from curry leaves (*Murraya koenigii*) ensures the recommended daily intake with less than 500 mg. The selenium extract, with its content of 0.5% ensure the daily recommended intake with less than 20 mg and is obtained from Indian mustard (*Brassica juncea*) by using a gentle water process.

Recent research has highlighted the strong potential of curcumin as a complementary therapy or nutritional approach to viral diseases and more particularly today of COVID-19. However, low bioavailability, absorption, permeability, and rapid metabolism still obstruct curcumin's use. To improve curcumin bioavailability, Vidya Herbs developed a naturally enhanced bioavailability curcumin. Vi-Active™ bioavailability is 2.2-times higher than standard curcumin. →

Marketed under the brand name Puremeric™ Vidya Herbs turmeric extracts are characterized by three curcuminoids profiles. HPLC characterisation, isotopic C14 analysis and DNA testing guaranteeing the natural origin and the absence of synthetic substitutions. The botanical variety is guaranteed by a botanist and complete traceability is ensured through the Full iD™ internal quality label. Puremeric™ extracts also benefit of SFT™ natural technology that combines an easier formulation of the product and streamlined production while maintaining clean labelling.

A review of the safety and the anti-inflammatory activity of curcumin in clinical trials assessed that a phase 1 human trial with 25 subjects using up to 8,000 mg of curcumin per day for 3 months found no toxicity from curcumin, while five other human trials using 1,125-2,500 mg of curcumin per day have also found it to be safe¹⁴. Although curcumin consumption up to several grams per day is safe, it seems reasonable to limit the dose at 1,200 mg/day in 3 x 400 mg doses¹⁵.

All these ingredients, Puremeric™ and minerals, are available in organic quality (ECOCERT certification) with verification against a list of 471 pesticides by a third-party laboratory. ●

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