

# Lysine Therapy Interrupts Replication of Virus

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✓ Fact Checked

## STORY AT-A-GLANCE

- › Lysine is an essential amino acid that has demonstrated positive results in the treatment of COVID-19, decreasing symptoms of infection in 80% of patients by 70% in the first 48 hours
- › Treatment used an average dose of 2,000 mg with an arginine-restricted diet and no coffee or caffeine. Several of the patients had a negative PCR test within 3 days of treatment and small group showed reduction in fever from 4 to 18 hours
- › Lysine has been well-studied and utilized against herpes simplex virus types 1 and 2; the best results were seen in patients who also restricted their arginine-rich foods
- › More benefits of lysine include a reduction in anxiety, reduced vascular calcification, faster wound repair and lower blood pressure in people with lysine deficient diets
- › The best way to balance your lysine and arginine levels is through dietary changes. If you supplement during a viral illness, the researchers caution to avoid zinc or calcium supplements, start with low doses if you are medically fragile and do frequent monitoring for those who have a pacemaker

Evidence suggests that lysine, an essential amino acid your body uses in the production of protein,<sup>1</sup> may help prevent or treat viral infections.<sup>2,3</sup> Virologists have also suggested lysine could help prevent or treat COVID-19.<sup>4</sup>

In the past months it's become obvious that COVID-19 can no longer be called a major public health threat. The virus is now endemic, in much the way that the seasonal flu or

common cold is. Yet, to continue to implement the Great Reset to “build back better,” fearmongers need this crisis to continue.

Just as influenza mutates and creates new variants, SARS-CoV-2 will continue to mutate in the environment. Thankfully, as viruses mutate within a population, they also tend to become more benign.<sup>5</sup>

One strategy to continue a high level of fear in a population is to censor any successful treatment modalities. Without successful treatments, society would be forced to focus on a vaccine. And yet, as I have written in the past months, there are several strategies you can use to reduce your risk of getting infected or to be treated if you are infected.

These strategies include optimal levels of vitamin D, quercetin and zinc, and use of hydroxychloroquine and ivermectin.<sup>6</sup> Without knowledge of successful treatments, you could be vulnerable to the Chicken Little warnings that the sky is continuing to fall.

The first warnings were about the number of deaths that we could experience from COVID-19. When this did not materialize, the next step was to publicize the rising number of “cases” that appeared to confirm dire predictions and sparked widespread panic.

However, those caseloads were supported by erroneous PCR testing methodology with threshold counts set so high that even healthy, uninfected people tested positive. This sparked lockdowns, masking and business shutdowns. But even with all the shutdowns and other contagion-containment measures, next came the Delta variant, which appears to be affecting both the vaccinated and the unvaccinated.<sup>7,8</sup>

The sky still has not fallen, but experts are promising that unless we comply with vaccine mandates, social distancing and scheduled testing, the world will surely come to an end. Let’s consider how one amino acid may help stop the replication of the virus and add to the growing number of strategies you can use to prevent or treat COVID-19.<sup>9</sup>

## **Amino Acid Stops Replication of Virus**

A small study<sup>10</sup> was undertaken by Bio-Virus Research Inc. and preprint published in September 2020. The company<sup>11</sup> works on both vaccines and therapeutic approaches to illness. In this paper they report on results they had using L-lysine against COVID-19.<sup>12</sup>

The treatment was built on a report published in 2016<sup>13</sup> in which researchers used L-lysine against MERS-CoV in vitro. Since L-lysine works universally on all herpes variants, the researchers believed it would be reasonable to expect that it would have the same effect on this viral family.<sup>14</sup>

The effectiveness of Lysine was evaluated in approximately 140 patients, eight of whom were living in the U.S. The majority of the patients were in the Dominican Republic and ranged in age from 16 to 77. According to the researchers, approximately 80% of participants with acute symptoms showed a minimum of 70% reduction in the first 48 hours.

Patients who had been in the hospital were discharged on an average of three days after treatment started. The writers stressed that lysine is a treatment for the condition and not a cure. Instead, it is dependent on the individual's immune response. In their observation of the participants there was an “incredibly short time to eliminate/reduce fever presumably due to extinguishing the associated cytokine storm.”<sup>15</sup>

The treatment used a dose range between 1,000 milligram (mg) to 4,000 mg. However, the average dose was 2,000 mg. The scientists said they “rarely” gave 4,000 mg, and they do not recommend exceeding 3,000 mg, since this could trigger a bradykinin build up and increased coughing. The participants in this study took 1,000 mg twice a day on Day 1 and if needed increase that by 500 mg to 1,000 mg on Day 2 and forward.

The researchers administered the lysine in staggered increments, beginning one hour before breakfast and again at 3 p.m. on Day 1. The second dose could be moved up on Day 2, which allowed for a third dose at 9 p.m. if needed.

## **Antiviral Actions of Lysine Dependent on Arginine**

The researchers recommend that lysine should be taken a minimum of one hour before a meal with 2 cups of water. The reasoning for 2 cups of water was to aid in absorption, anticoagulation and to dampen the appetite of the participant and thus help reduce the intake of arginine.<sup>16</sup>

Lysine and arginine work in concert in the body. The ratio between lysine and arginine influences viruses and your immune system. The researcher's intent was to lower the amount of arginine in the body by restricting foods high in arginine while raising levels of lysine using supplementation.

While the lysine and arginine amount in brewed coffee is nearly identical,<sup>17</sup> the researchers completely restricted coffee and other caffeinated drinks as they triggered a return of symptoms.

The researchers reference one study<sup>18</sup> that showed lysine suppresses RNA and DNA viruses, potentially by interfering with the incorporation of arginine into the virus. Lysine also inhibits the absorption of arginine. The researchers propose there is also a more complex pathway that lysine uses with respect to inhibiting SARS-CoV-2.<sup>19</sup>

A newer study<sup>20</sup> published in 2021 evaluated the effects of lysine and arginine and their ester derivatives on influenza A and SARS-CoV-2. The researchers found that in the lab study, lysine and the ester derivative could efficiently block infection and arginine boosts viral infection of both viruses. These findings have suggested:<sup>21</sup>

*"... lysine supplementation and the reduction of arginine-rich food intake can be considered as prophylactic and therapeutic regimens against these viruses while also providing a paradigm for the development of broad-spectrum antivirals."*

Amazingly, several of the inpatients in the study using lysine were PCR negative for SARS-CoV-2 by Day 3.<sup>22</sup> The researchers also found that the five patients who were not eating due to a lack of appetite had a significant reduction in the time it took to reduce their symptoms. The assumption the researchers made was that the participants were not consuming arginine, which sped the response time.

This small group of people demonstrated a significant reduction in fever and nonfebrile symptoms from four to 18 hours. While symptoms appeared to rapidly decline, D-dimer levels were high in some participants. In the participants, only a small percentage continue to have fever after 24 hours. The researchers found it was the combination of lysine supplementation and arginine restriction that offered the best results.

The researchers wrote of past evidence demonstrating that lysine influences interleukin-10, interleukin-6, tumor necrosis factor and interleukin-1 beta that are all implicated in fever. Data demonstrate that lysine has an inhibitory effect on interleukin-6 and increases interleukin-10 anti-inflammatory cytokines.

The researchers also wrote of evidence demonstrating lysine decreases production of nitric oxide, which limits the pathogenesis of inflammation and reduces proinflammatory cytokines. This suggests that independent of its role in suppressing arginine, lysine may also suppress viral replication.

## **Lysine Effective Against Herpes Cold Sores**

The researchers<sup>23</sup> wrote that in 1974, a researcher from the Bio-Virus Research team proposed in an article published in the Lancet<sup>24</sup> that lysine could be effective against the herpes virus. Four years later a clinical follow-up study confirmed the effectiveness<sup>25</sup> and another study in 1981<sup>26</sup> demonstrated that lysine inhibited arginine in vitro.

In 2016, experts estimated that 13.2% of the world aged 15 to 49 years were living with herpes simplex virus type 2.<sup>27</sup> Data from the 2005-2010 NHANES survey show people aged 14 to 49 had a prevalence of 53.9% of herpes simplex virus type-1 and 15.7% of herpes simplex virus type 2 during that time period.<sup>28</sup>

A literature search published in 2017<sup>29</sup> concluded that without a low-arginine diet, supplementation with lysine at 1 gram per day was not effective. Studies using 3 grams per day appeared to reduce the number of herpes outbreaks.

The effectiveness of lysine with herpes virus is related to the herpes virus dependency on arginine to replicate.<sup>30</sup> Direct application of lysine to cold sores can also reduce the

length of the outbreak.

## Balance Your Lysine and Arginine Intake

Your body needs a balance between lysine and arginine to function optimally. Foods that are rich in lysine<sup>31</sup> include lean meat, tuna, low-fat ricotta cheese and milk. Foods that are rich in arginine include soy-based flour, seed flours, seeds, nuts, egg and chocolate.<sup>32</sup> Many people's diets are richer in arginine than they are in lysine.

Benefits of lysine are not limited to your immune system. For example, studies have demonstrated that lysine can reduce anxiety levels<sup>33,34</sup> and reduces vascular calcification.<sup>35</sup> Animal research shows that lysine is necessary for wound repair<sup>36</sup> and helps the formation of collagen.<sup>37</sup>

One of the symptoms of lysine deficiency is high blood pressure. In one study<sup>38</sup> of 50 adults with lysine-deficient diets and high blood pressure, supplementation produced a significant reduction in blood pressure. Of course, women who are pregnant or nursing should consult with their doctor before taking a lysine supplement.

One of the best ways to balance your lysine and arginine levels is through diet modification. However, during a viral illness lysine supplementation at levels lower than 3 grams per day may help shorten the length of your illness. If you choose to use a lysine supplement, the researchers from the featured lysine study had several cautionary notes:<sup>39</sup>

- Patients who are medically fragile or asymptomatic for over one month should exercise caution in using lysine and start with a low dose for the initial days.
- Patients with COVID-19 should avoid coffee, exercise, arginine-rich foods and marijuana.
- Since lysine can raise zinc and calcium levels, supplementation with zinc or calcium should be avoided while taking lysine.
- Lysine can also increase cardiac output and pulmonary resistance so patients using a pacemaker should be under close clinical observation.

