



## SHORT COMMUNICATION

### THE IMPACT OF INTERMITTENT FASTING DURING RAMADAN ON IMMUNITY AGAINST INFECTION

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#### ABSTRACT

This summarizes presentations at International Halal Conferences, which explores the potential of intermittent fasting during Ramadan to enhance the body's immunity against infections, particularly in the context of the COVID-19 pandemic. Given the severe consequences of the outbreak, there is a heightened interest in dietary and lifestyle behaviors that can bolster immune defenses. Ramadan, characterized by fasting from dawn to sunset, presents a unique form of intermittent fasting. Recent studies indicate that this practice may reduce inflammation and oxidative stress, thereby enhancing immune function. A systematic review and meta-analysis of 500 studies revealed significant reductions in pro-inflammatory markers and improvements in gene expressions related to anti-inflammatory and antioxidant mechanisms. These findings suggest that Ramadan fasting could play a crucial role in improving immunity, reducing the risk of infections, and supporting overall health.

**Keywords:** *Intermittent Fasting, Ramadan, Immune Function, COVID-19, Inflammation Reduction*



## Introduction

This paper explores the potential of intermittent fasting during Ramadan to enhance the body's immunity against infections, especially in the context of the COVID-19 pandemic. As the global community continues to grapple with the repercussions of the COVID-19 outbreak, there is heightened interest in dietary and lifestyle behaviors that may bolster the immune system. Ramadan, a month of fasting observed by Muslims worldwide, presents a unique opportunity to investigate the effects of intermittent fasting on health.

## Background

In light of the COVID-19 outbreak and its severe consequences, there has been a growing interest in dietary and lifestyle behaviors that may bolster immunity. With Ramadan approaching, there is considerable debate on whether fasting during this holy month can enhance or impair the body's ability to combat infections. This paper reviews relevant research on intermittent fasting, particularly during Ramadan, and its effects on the immune system.

## The Scientific Basis of Fasting

Fasting has garnered significant attention in the scientific community for its potential health benefits. Notably, Professor Yoshinori Ohsumi, the Nobel Laureate in Physiology or Medicine in 2016, was recognized for his work on autophagy, a process activated by fasting that helps protect cells from various types of damage and promotes longevity. This mechanism is crucial in understanding how fasting can improve overall health and resistance to diseases.

Recent studies, such as those published in the *New England Journal of Medicine* and *Science*, have explored the effects of intermittent fasting on health, aging, and disease. These studies indicate that intermittent fasting, including the type practiced during Ramadan, can have positive health implications.

## Ramadan Fasting and Immunity

During Ramadan, Muslims fast from dawn to sunset, a practice known as intermittent fasting since it involves alternating periods of fasting and feasting within 24 hours. This type of fasting differs from complete fasting and has unique effects on the body.

A systematic review and meta-analysis of 500 studies revealed significant findings regarding Ramadan fasting's impact on inflammatory markers. The analysis included 12 studies across eight countries, including Iran, Turkey, Jordan, Indonesia, Saudi Arabia, Denmark, and others. The results indicated a significant reduction in pro-inflammatory cytokines such as interleukin-1 beta, interleukin-6, TNF-alpha, and C-reactive protein. These markers are known to increase inflammation and infection risk, suggesting that Ramadan fasting may lower inflammation and enhance immunity.



Another study on the expression of specific genes related to anti-inflammatory and antioxidant mechanisms found that Ramadan fasting significantly increased the expression of genes like TFAM, SOD2, and NRF2. These genes are crucial for improving the body's ability to combat infections and reduce oxidative stress.

### **Implications for Obesity and Immunity**

Obesity is a known risk factor for compromised immunity and increased infection susceptibility. A meta-analysis of 85 studies involving 4,326 subjects from 23 countries found that Ramadan fasting was associated with a reduction in body weight and waist circumference. This reduction in visceral fat, known to produce pro-inflammatory cytokines, likely contributes to improved immune function.

Additionally, Ramadan fasting was found to regulate hormones such as leptin and adiponectin, which play roles in fat metabolism and inflammation. A decrease in leptin and an increase in adiponectin were observed, suggesting improved metabolic health and reduced inflammation.

### **Conclusion**

Ramadan diurnal intermittent fasting appears to offer protective effects against inflammation and oxidative stress, potentially boosting the immune system's ability to fight infections, including viral infections like COVID-19. Although direct studies on COVID-19 are lacking, the existing literature supports the hypothesis that intermittent fasting during Ramadan can enhance immunity.

It is important to differentiate between personal fasting and social gatherings during Ramadan. While fasting can have positive health effects, social gatherings may increase infection risk. Therefore, maintaining social distancing and focusing on a healthy diet low in sugars and rich in fruits, vegetables, and nuts is crucial during Ramadan.

In summary, Ramadan fasting may provide beneficial effects on immunity, reducing the risk of infections through various mechanisms. Further research is needed to confirm these findings, especially in the context of COVID-19.

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