



**A.V.V.M. Sri Pushpam College (Autonomous)**

**Poondi– 613 503, Thanjavur-Dt, Tamilnadu**

*(Affiliated to Bharathidasan University, Tiruchirappalli – 620 024)*

**3.7.1 Number of Collaborative activities per year  
for research/ faculty exchange/ student  
exchange/ internship/ on –the-job training/  
project work**

## **Collaborating Agency:**

**Dr. K. Jeyaprakash, Assistant Professor, Dept. of Zoology,  
Rajah Serfoji Govt. College (Autonomous), Thanjavur**



Dr. S. GANESAN  
Assistant Professor  
PG & Research Department of Zoology  
AVVM Sri Pushpam College (Autonomous)  
Poondi-613 503,  
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Dr. K. JEYAPRAKASH  
Assistant Professor & Head  
PG & Research Department of Biochemistry  
Rajah Serfoji Government College  
(Autonomous),  
Thanjavur- 613 005, Tamil Nadu, India



Date: 03.02.2020

**LINKAGE**  
For the year 2019-2020

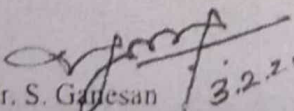
**Between**

1. Dr. S. Ganesan  
Assistant Professor  
PG & Research Department of Zoology  
A.V.V.M Sri Pushpam College  
(Autonomous), Poondi - 613 503.
2. Dr. K. Jeyaprakash  
Assistant Professor  
PG & Research Department of Biochemistry  
Rajah Serfoji Government College  
(Autonomous), Thanjavur - 613 005

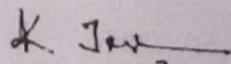
Considering the significance of the noble cause for the student community, we have come forward to collaborate with each other to exchange research knowledge, expertise, laboratory and library facilities to the process of scientific research and education in the field of materials science. The parties (mentioned above as 1. & 2.) have had preliminary discussion in this matter and have ascertained areas of broad consensus. The parties now therefore agreed to enter in writing these avenues of consensus, under a flexible linkage, and this project aims to fill the gap between knowledge demand and subject expertise related to the mentioned field.

**Joint Responsibilities**

- Sharing of laboratory facilities, library resources, database etc.,
- Joint Publication of research articles, books, magazines, bulletins etc.,
- Jointly organizing conferences, seminars, symposia and workshops.
- Submitting joint proposals for research funding from agencies like UGC, CSIR, DST and TNSCST.

  
Dr. S. Ganesan 3.2.2020

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## Review Article

## Biochemistry and Biotechnology

# COVID-19- MOLECULAR TRANSMISSION AND DIAGNOSIS- REVIEW ARTICLE

Dr. K. Jeyaprakash<sup>1</sup>, Dr. S. Velavan<sup>2</sup>, Dr. S. Ganesan<sup>3</sup> & Dr. P. Arjun<sup>4</sup>

## ABSTRACT

Coronaviruses are a group of related RNA viruses that cause diseases in mammals and birds. In humans, these viruses cause respiratory tract infections that can range from mild to lethal. Diagnostic testing to identify persons infected with severe acute respiratory syndrome-related coronavirus-2 (SARS-CoV-2) infection is central to control the global pandemic of COVID-19 that began in late 2019. In a few countries, the use of diagnostic testing on a massive scale has been a cornerstone of successful containment strategies. In contrast, the United States, hampered by limited testing capacity, has prioritized testing for specific groups of persons. Real-time reverse transcriptase polymerase chain reaction-based assays performed in a laboratory on respiratory specimens are the reference standard for COVID-19 diagnostics. However, point-of-care technologies and serologic immunoassays are rapidly emerging. Many affluent countries have encountered challenges in test delivery and specimen collection that have inhibited rapid increases in testing capacity. These challenges may be even greater in low-resource settings. Urgent clinical and public health needs currently drive an unprecedented global effort to increase testing capacity for SARS-CoV-2 infection. Here, the authors review the current array of tests for SARS-CoV-2, highlight gaps in current diagnostic capacity, and propose potential solutions.

**Keywords:** Corona Virus, SARS, Diagnosis, Global, highlight, challenges.

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## INTRODUCTION

In December 2019, a cluster of cases of unexplained viral pneumonia was identified in Wuhan, a metropolitan city in Hubei province, China. Initially, most of the confirmed cases were linked with the Huanan seafood market in Wuhan, where numerous types of live wild animals are sold, including poultry, bats, groundhogs, and snakes. To identify the causative agent of this disease, a large number of tests were conducted, which ruled out several etiological agents that may cause similar symptoms, including the severe acute respiratory syndrome coronavirus (SARS-CoV), Middle East respiratory syndrome coronavirus (MERS-CoV), avian influenza virus, and other common respiratory pathogens. Finally, a new coronavirus, putatively named 2019-nCoV by the World Health Organization (WHO) on January 12, 2020, was identified as the causative pathogen of this outbreak. On January 20, after a visit to Wuhan, Professor Zhong Nanshan, a SARS intervention specialist, confirmed that 2019-nCoV was spreading between people [1], which led to increased vigilance by the Chinese government and people. At 10:00 on January 23, Wuhan, the birthplace of the disease, declared a general closure to prevent its further spread.





## IMPACT OF NUTRITIONAL INTERVENTIONS ON CORONA VIRUS INFECTION – REVIEW ARTICLE

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### ABSTRACT

Protection of host against environmental agents such as pathogenic micro-organisms (bacteria, fungi, and viruses) and chemicals, has been controlled by immune system, thereby preserving the integrity of the body. Adequate nutritional status should be maintained with appropriate intakes of calories, vitamins, minerals to preserve organism defense mechanisms and water that should be continuously provided by a healthy diet. The emergence of new infectious diseases with new pathogenic properties constitutes a serious health issue worldwide. Severe acute respiratory syndrome (SARS) represents one of the most recent emerging infectious diseases, caused by a novel coronavirus member called (SARS-CoV-2), identified in Wuhan, Hubei, China in December 2019, and recognized as pandemic by the World Health Organization (WHO). The nutritional status of each COVID-19-infected patient should be assessed prior undertaking treatments. Nutritional support should be the basis of management of any infected individual. Therefore, preventive measures remain the first priority and strategy to develop throughout proper hygiene, healthy diet and staying home.

**KEYWORDS:** Nutrition, vitamins, minerals, Immune system, Viral diseases, SARS-CoV-2.

### 1.0. INTRODUCTION

Coronaviruses are a group of related RNA viruses that cause diseases in mammals and birds. In humans, these viruses cause respiratory tract infections that can range from mild to lethal. Mild illnesses include some cases of the common cold (which is caused also by certain other viruses, predominantly rhinoviruses), while more lethal varieties can cause SARS, MERS, and COVID-19. Symptoms in other species vary: in chickens, they cause an upper respiratory tract disease, while in cows and pigs they cause diarrhea. There are as yet no vaccines or antiviral drugs to prevent or treat human coronavirus infections.<sup>[1]</sup>

Coronaviruses constitute the subfamily *Orthocoronavirinae*, in the family *Coronaviridae*, order *Nidovirales*, and realm *Riboviria*. They are enveloped viruses with a positive-sense single-stranded RNA genome and a nucleocapsid of helical symmetry. The genome size of coronaviruses ranges from approximately 26 to 32 kilobases, one of the largest among RNA viruses. They have characteristic club-shaped spikes that project from their surface, which

in electron micrographs create an image reminiscent of the solar corona, from which their name derives.<sup>[2,3]</sup>

#### 1.1. Etymology

The name "coronavirus" is derived from Latin *corona*, meaning "crown" or "wreath", itself a borrowing from Greek.<sup>[4]</sup> The name was coined by June Almeida and David Tyrrell who first observed and studied human coronaviruses. The word was first used in print in 1968 by an informal group of virologists in the journal *Nature* to designate the new family of viruses.<sup>[5]</sup> The name refers to the characteristic appearance of virions (the infective form of the virus) by electron microscopy, which have a fringe of large, bulbous surface projections creating an image reminiscent of the solar corona or halo. This morphology is created by the viral spike peplomers, which are proteins on the surface of the virus.<sup>[6]</sup>

#### 1.2. History

Coronaviruses were first discovered in the 1930s when an acute respiratory infection of domesticated chickens was shown to be caused by infectious bronchitis