

**Letter to Editor: Zoonotic Perspective of 2019 Novel Coronavirus Disease (COVID-19)**

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Letter to Editor

Recently Biscayart et al. stated that coronaviruses cause deleterious diseases in both humans and animals [1]. In the previous three decades China affected with different kinds of viral outbreaks in which include avian influenza disease in 1997, severe acute respiratory syndrome (SARS) in 2003 and severe fever with thrombocytopenia syndrome (SFTS) in 2010 [2]. The current outbreak of novel coronavirus disease (2019-nCoV) is much similar in case of symptoms with SARS-CoV and Middle East respiratory syndrome CoV (MERS-CoV) [3]. The current pandemic of severe respiratory disease was first observed in Wuhan city of China which is more attractive in the central China. World Health Organization (WHO) office in China was first time observed infected individuals with unknown etiology of pneumonia in Wuhan city on 31 December 2019. The causative agent of this etiology was unknown at that time. After that the Chinese Centers for Disease Control and Prevention announced on 9th January that a novel strain of coronaviruses has been emerging out which is much similar to the previous outbreak of (SARS)-CoV monophyletic group may be the effective agents which are responsible for the current outbreak of Covid-19. Later on, it was confirmed that a novel strain of coronavirus responsible for the current outbreak is named as (SARS-CoV-2) [4]. Now it is very important to know about the reservoir of coronavirus, its dispensation and route of transmission. To control the further outbreaks of coronaviruses in future knowledge about the zoonotic aspects is very necessary. During the early pandemic of Covid-19 outbreak a study was designed in January 2020 in which 41 infected individuals were included with age near to 49 screened Covid-19 positive observed that half of patients

confirmed with underlying diseases, which include hypertension and cardiac diseases 15% and diabetics 20%. The symptoms associated with these patients include pyrexia 98%, cough 76% and tiredness 44%. The major obstacles of Covid019 patients include cardiac trauma 12%, RNAemia 15%, respiratory syndrome 29% and some other secondary problems. All of the infected individuals which were 32% shifted to the Intensive Care Unit (ICU) and the mortality ratio was 15% [5]. Zoonotic diseases with emerging novel strains from infected animals to human caused serious diseases in the history. Animals are the possible source of diseases although it is thought that Covid-19 spread from the animal host, but it is not cleared which animal is the possible source of this outbreak. It was observed that bat coronavirus is associated 96% with the current pandemic of SARS-CoV-2 [2].

The basic aim of this study was to observe zoonotic outbreak of Covid-19 to humans. First time the coronaviruses were observed in the mid of 1960 which was known to infect other animals including mammals & birds and also humans. To understand zoonotic perspectives viral transmission can occur through different routes like fecal, oral, airborne and other contaminated objects. Almost seven different strains of coronaviruses that are infecting the humans have been identified until now. Infants and elders get infected with the familiar human coronaviruses which includes Betacoronavirus HCoVOC43 & HCoV-HKU1 and Alphacoronavirus HCoV-229E which causes serious respiratory infections and common cold, while Alpha-coronavirus HCoV-NL63 is the major causative agents of bronchiolitis in the infants [1]. However, new strains

of coronaviruses have come out which caused serious infections in humans include severe acute respiratory syndrome coronavirus in 2002 (Betacoronavirus with subgenus Sarbecovirus) and Middle East respiratory coronavirus in 2012 (subgenus Merbecovirus). In 2019, a novel strain of coronavirus with unknown etiology of pneumonia patients was first time identified in Wuhan city of China and after that the pandemic named with coronavirus disease 2019 (Covid-19). The SARS-CoV-2 is much associated with the SARS-CoV which genetically belongs to the Betacoronavirus with subgenus Sarbecovirus [1]. One more study was designed by Li and his coworkers with 425 highest numbers of infected patients in the age of 59 which recently visited Seafood Wholesale Market. The mean incubation period was 5.2 days and 56% individuals were male. Different kinds of wild and domestic animals were sold unlawfully in the seafood market which is located at Wuhan city of China. Then it was

observed that this zoonotic outbreak may be spreading from animal host to humans. However earlier transmission during the Covid-19 pandemic were from animal host which was reported by four infected patients from Seafood market of Wuhan but all the other infections that are globally transmitted are human to human. It was observed human to human transmission method was much active that spread to all the countries within less time. But the transmission mode from animals to human can be minimized in contrast to humans [2]. Recently human to human transmission has been increased in many directions and it can be transmitted through various ways like cough droplets or sneeze, public transport places, restaurants, medical departments, and other secondary public places. Different scientists illustrated that MERS-CoV is also a bat origin coronavirus strain from Africa or Saudi Arabia [6].

Table 1: Different coronavirus strains, their host and symptoms of infection.

S. No.	Coronavirus strains	Primary host	Intermediate host	Symptom of infection
1	HCoV-229E	Bat	Camelids	Chest infection
2	HCoV-HKU1	Rat	Not defined	Acute pneumonia
3	HCoV-OC43	Rat	Cow	Mild upper respiratory disease
4	HCoV-NL63	Bat	Not defined	Infections in respiratory system
5	MERS-CoV	Bat	Camels	Harsh acute respiratory syndrome (37% mortality)
6	SARS-CoV	Bat	Civets	Harsh acute respiratory syndrome (10% mortality)
7	SADS-CoV	Bat	Pig	Acute diarrhea syndrome
8	SARS-CoV-2	Bat (Expected)	Not defined	Fever, Vomiting, shortness of Breath, coughing, pneumonia

But it is still a question mark that how camel get infected with MERS-CoV from bats. For many years, camels had been known as a zoonotic reservoir for MERS-CoV [7]. Different studies suggested that infected bat is spreading the virus to the host which then act as an intermediate host and then virus transmitted to the humans from the intermediate host (**Table 1**) [11]. Bats have the high capacity of flying about more than 1000 Km which can transmit the virus to the different areas and at that time they adopted different new pathogens as a reservoir [8]. One of the major issues of SARS-CoV-2 early transmission to other countries is the

Chinese New Year celebration resulted in the increased number of cases [9-11].

It is concluded that Covid-19 is a zoonotic disease. The burden of current pandemic emerging from bats is more significant as compared to the past coronaviruses like SARS-CoV and MERS-CoV. It is very important to understand the association of animals and humans in case of future zoonotic outbreaks worldwide. In the current medical conditions, the elders have the greater risk of infection as compared to the young ones.

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