

Research Article

**Unveiling the Miraculous Aspect of Qur'an on Viruses and Their Wonders: A Descriptive Qualitative Study**

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**Abstract.** Over centuries, viruses have puzzled microbiologists due to their wonders: their sizes, shapes, structures, morphologies, their true nature, their life cycle; and subsequent disease progression, morbidity, and mortality. This descriptive qualitative study adopted Thematic Approach and Synoptic Approach to uncover how Qur'an allude to these wonders. Tafsir Ibn Kathir was used for the preliminary interpretation of the identified verses. Data concerning the wonders of viruses were screened from MEDLINE and PUBMED databases. The preposition *من* (part of) used in the phrase *لَا يَعْزُبُ عَنْهُ مِثْقَالُ ذَرَّةٍ فِي السَّمَاوَاتِ وَلَا فِي الْأَرْضِ وَلَا أَصْغَرُ مِنْ ذَلِكَ وَلَا أَكْبَرُ إِلَّا فِي كِتَابٍ مُبِينٍ* (not even the weight of a speck of dust or less than that or greater escapes His knowledge in the heavens or in the earth but it is in a Clear Book) of Qur'an, 61:10, which is similar to another phrase

used in Qur'an, 34:3, allude that, even the virus particles and their tiniest particles that makes them, are within Allah's knowledge. This modest contribution may help people to ponder on the presence, greatness and glory of Allah (S.W.T). May also generate the interest of other scholars to mount further research in this subject.

**Keywords:** Dharra, Particle (S), Atom, Wonder, Miracles, Viruses.

## INTRODUCTION

In Qur'an, 16:89, Allah (S.W.T) has revealed that, Qur'an has described everything. This profound assertion invites deeper exploration into the modalities by which Allah (S.W.T) conveys knowledge in the Qur'an. Survey of the verses of the Qur'an indicates that, in the Qur'an, there are two main modalities in which Allah (S.W.T) describe things: directly [by mentioning their names or characteristics], or indirectly [by alluding to them]. Furthermore, in various verses of the Qur'an; such as Qur'an, 41:53, 27:93, and 51:21, Allah (S.W.T) has promised humans to show them His signs of the presence, greatness and glory. These are the signs of the things, phenomenon, and various matters; including the matter related to Islamic Shari'ah, what He has prohibited and what He has permitted. Among these signs are those related to the microscopic worlds; including the wonders in the world of the viruses: their sizes, shapes, structures, morphologies, their true nature, their life cycle [entry (attachment, penetration, intracellular trafficking, and uncoating), gene expression, genome replication, capsid assembly, envelopment, release (exit or budding), maturation]; and subsequent disease progression, morbidity, and mortality.

Following this promise, in 1898–1899, the Dutch plant pathologist Beijerinck; who was studying tobacco mosaic disease, and the German veterinarians Frosch and Loeffler; who was studying foot and mouth disease of cattle, demonstrated that these diseases may be transmitted by materials that can pass through a filter which have pores that are too small to enable the bacteria to pass through them. This discovery led to the recognition of viruses as unique microorganisms, termed 'filterable viruses' (Fenner et al., 2014). Later on, they came to be called ultramicroscopic. Hence, the viruses can be regarded as nanoparticle in nature. This is because, they are tiniest to be seen with the aid of ordinary light microscope.

The proper identification of their structures, morphologies, and life cycle remained elusive until 20<sup>th</sup> century when Allah (S.W.T) enabled microscopists to invent electron microscopes; such as scanning and transmission electron microscopes, and using them for virus investigations. In 1959, our understanding of viruses' ultra-structures was broadened when Horne and Brenner investigated the viruses under electron microscope by applying Potassium phosphotungstate, a negative stain which is electron-dense, and hence, fills the interstices of the viral surface. This helped to achieve unprecedented details in virus imaging by providing

a detailed electron micrographs (Fenner et al., 2014). This breakthrough allowed for the identification of the intricate structures within the viruses, their morphologies, and life cycle.

Inside the infected cells, the capsomers of the simple viruses assemble themselves to form the capsid. The capsid is composed of morphological units called capsomers, that are held together by noncovalent bonds. Individual capsomers; that are made up by one or more polypeptide molecules, are normally visible under electron microscope. In helical nucleocapsids, the viral nucleic acid is folded throughout its length in a particular relationship with the capsomers, but there is no such particular relationship between RNA and protein in the simple icosahedral picornaviruses (Burrell et al., 2017; Fenner et al., 2014). The mode of this assembly is strictly determined by the nature of the bonds formed between individual capsomers, which give a type of symmetry to the capsid. About two types of symmetry have been recognized: icosahedral; in which the protein subunits assemble into a symmetric shell that covers the nucleic acid-containing core, that are round and having 12 vertices (corners) and 20 faces, each an equilateral triangle, and helical; in which the protein subunits and the nucleic acid are arranged in a helix, that fold and form rod-like shapes (Burrell et al., 2017; Louten, 2016; Fenner et al., 2014).

A complete assembled virus particle is called a virion. Many key structures within the virion are arrangements and sub-arrangements of a large number (normally hundreds) of similar protein subunits that bind together sterically to create a stable shell known as capsid (envelope or coat) (Burrell et al., 2017). In simple viruses, a virion consists of a single molecule of nucleic acid; either DNA or RNA, surrounded by a protein envelope known as the capsid. The capsid functions as a shell to prevent the virus genome from nucleases and which during infection attaches the virion to the specific receptors on the host cells. The capsid and its enclosed nucleic acid together make up the nucleocapsid. In some complex viruses, the capsid surrounds a protein core, and in other viruses the capsid is surrounded by a lipoprotein envelope (Burrell et al., 2017; Fenner et al., 2014).

As a result, the tiniest viruses have about 20 nm diameter, although HIV virus and influenza virus possess a more typical size, approximately 100 nm in diameter. In contrast, average human cells have 10–30  $\mu\text{m}$  (microns) diameter, this implies that they are about 100 to 1000 times larger than the viruses that are infecting them. However, some viruses are significantly larger than 100 nm. Poxviruses, such as the variola virus that causes smallpox, can reach about 400 nm in length, and filoviruses, like the dangerous Marburg virus and Ebola virus, are only 80 nm in diameter but extend into long threads that may approach the lengths of over 1000 nm. Many large viruses that infect amoebas have currently been identified: Megavirus is about 400 nm diameter, and Pandoraviruses have an elliptical or ovoid structure of approximately 1000 nm in length. It is a common error to imagine that all viruses

are smaller than bacteria. Many bacteria are 2000–3000 nm in size, although certain strains of bacteria known as *Mycobacteria* can be 10 times smaller than this, placing them in the range of large viruses. Therefore, even though viruses are generally smaller than bacteria, few of them appear to be larger than some bacteria. Their sizes range from only a few nanometers to larger than some bacteria (Azinas et al., 2018; Louten, 2016; Funner et al., 2014; Norrby, 2014).

Viruses are everywhere; and they may infect all living organisms on the planet. They share many characteristics with the living organisms: the ability to reproduce (replicate), and having the inheritable materials (i.e., genome). However, they may be considered as nonliving entities, because they cannot replicate outside the host cells. They entirely depend on the body machinery when they enter the host cells. They cause a wide range of diseases; including genital herpes, measles, chicken pox, influenza, and common cold (Nathanson, 2016). Throughout the human history, these diseases have caused a number of morbidities, disability and mortality to the humans. Many of the emerging and re-emerging infectious diseases; like HIV infections, coronavirus diseases (such as COVID-19, SARS, and MERS), Lyme disease, *Escherichia coli* (*E. coli*) O157:H7 infections, Hantavirus infections, Dengue fever, West Nile fever, and Zika fever, are caused by the viruses (Nathanson, 2016). Consequently, the burden of morbidities, disability, and mortality due to the virus infections continue to prevail throughout the world. However, despite of their abundance and the detrimental effect they cause, most viruses do not cause diseases, rather they perform other functions; as decreed by Allah (S.W.T), that are more beneficial for our existence (Badarinarayan & Sauter, 2022).

The specific focus of this study was to uncover how the Qur'an has alluded to all these wonders in the world of the viruses. This may help people to ponder on the presence, greatness and glory of Allah (S.W.T). It may also generate the interest of other scholars to mount further research in this subject.

## METHODOLOGY

This was descriptive qualitative study that adopted Thematic Approach [*Uslub Tafsir Al-Maudhu'i*]<sup>1</sup> and Synoptic Approach [*Uslub Tafsir Ijmali*]<sup>2</sup> (adopted from Alawi & Jakarta, 2018) to uncover how Qur'an has alluded to the structures, morphologies and all the wonders of virus particles. Tafsir Al-Qur'an Al-'Adhwim of Al-Imam Ibn Kathir; which is regarded as the second after Tafsir Al-Tabari of Al-Imam Ibn Jarir At-Tabari and Al-Jaami'ul Ahkaam al-Qur'an of Al-Imam Al-Qurṭubi, was used as the principle tafsir to get the preliminary interpretation of the identified

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<sup>1</sup> Is the systematic writing of the interpretations applied by commentators by not adopting the order of verses in the glorious *Qur'an*, but by collecting all the verses that address the same theme and then drawing logical conclusions.

<sup>2</sup> In this methodology, the commentators interpret the verse in conformity with the grouped verses, then describe the meaning of the whole verse and draw conclusions.

verses. Modern tafsirs such as Saheeh International Translation by Qur'an Project, The Message of Qur'an by Muhammad Asad, and Tafsir Jalaalayn by Jalali Ad-Din As-Suyuti and Jalali Ad-Din Al-Mahali were consulted to supplement this purpose. Further meanings of interested words from the identified verses were collected from The Hans Wehr Dictionary of Modern Written Arabic. Data concerning sizes, structures, morphologies, and all wonders of the viruses were screened from MEDLINE and PUBMED online medical databases. Only articles published from 2000 onwards were selected. These data were qualitatively analysed to show how the wording of the Qur'an in these two verses have traversed the subject of the wonders in the world of viruses: their sizes, shapes, structures, morphologies, their true nature, their life cycle [entry (attachment, penetration, intracellular trafficking, and uncoating), gene expression, genome replication, capsid assembly, envelopment, release (exit or budding), maturation]; and subsequent disease progression, morbidity, and mortality.

## FINDINGS AND DISCUSSION

The comprehensive survey in the Qur'an revealed two verses that allude to the wonders in the world of viruses: their sizes, shapes, structures, morphologies, their true nature, their life cycle [entry (attachment, penetration, intracellular trafficking, and uncoating), gene expression, genome replication, capsid assembly, envelopment, release (exit or budding), maturation]; and subsequent disease progression, morbidity, and mortality. These verses are:

وَمَا تَكُونُ فِي شَأْنٍ وَمَا تَتْلُو مِنْهُ مِنْ قُرْآنٍ وَلَا تَعْمَلُونَ مِنْ عَمَلٍ إِلَّا كُنَّا عَلَيْكُمْ شُهُودًا إِذْ تُفِيضُونَ فِيهِ وَمَا يَعْزُبُ عَنْ رَبِّكَ مِنْ مِثْقَالِ ذَرَّةٍ فِي الْأَرْضِ وَلَا فِي السَّمَاءِ وَلَا أَصْغَرَ مِنْ ذَلِكَ وَلَا أَكْبَرَ إِلَّا فِي كِتَابٍ مُبِينٍ

Neither you do any deed nor recite any portion of the Qur'an, nor you do any deed, but We are Witness thereof when you are doing it. **And nothing is hidden from your Lord (so much as) the weight of a speck of dust on the earth or in the heaven. Not what is less than that or what is greater than that but is (written) in a Clear Record.** (Qur'an, 10:61)

وَقَالَ الَّذِينَ كَفَرُوا لَا تَأْتِينَا السَّاعَةُ قُلْ بَلَىٰ وَرَبِّي لَتَأْتِيَنَّكُمْ عَالِمِ الْغَيْبِ لَا يَعْزُبُ عَنْهُ مِثْقَالُ ذَرَّةٍ فِي السَّمَاوَاتِ وَلَا فِي الْأَرْضِ وَلَا أَصْغَرَ مِنْ ذَلِكَ وَلَا أَكْبَرَ إِلَّا فِي كِتَابٍ مُبِينٍ

Those who disbelieve say: "The Hour will not come to us." Say: "Yes, by my Lord, the All-Knower of the Unseen, it will come to you; **not even the weight of a speck of**

**dust or less than that or greater escapes His knowledge in the heavens or in the earth but it is in a Clear Book.** (Qur'an, 34:3)

In these two verses, two similar phrases can be extracted:

وَمَا يَعْزُبُ عَنْ رَبِّكَ مِنْ مِثْقَالِ ذَرَّةٍ فِي الْأَرْضِ وَلَا فِي السَّمَاءِ وَلَا أَصْغَرَ مِنْ ذَلِكَ وَلَا أَكْبَرَ إِلَّا فِي كِتَابٍ مُبِينٍ

**And nothing is hidden from your Lord (so much as) the weight of a speck of dust [dharra/ ذَرَّةٌ] on the earth or in the heaven. Not what is less than that or what is greater than that but is (written) in a Clear Record.** (Qur'an, 10:61)

لَا يَعْزُبُ عَنْهُ مِثْقَالُ ذَرَّةٍ فِي السَّمَاوَاتِ وَلَا فِي الْأَرْضِ وَلَا أَصْغَرَ مِنْ ذَلِكَ وَلَا أَكْبَرَ إِلَّا فِي كِتَابٍ مُبِينٍ

**Not even the weight of a speck of dust [dharra/ ذَرَّةٌ] or less than that or greater escapes His knowledge in the heavens or in the earth but it is in a Clear Book.** (Qur'an, 34:3)

The word *dharra/ ذَرَّةٌ* contained in the phrase *laa ya'azubu 'anhu mithqaalu dharratin fii samaawaati wala fil ardhi wala aswkar min dhaalika wala akbaru ilaa fii kitaabin mubin*; which has been used in Qur'an, 61:10, which is similar to the one used in Qur'an, 34:3, and in the Tafsir Al Qur'an Al 'Adhwim by Al Imam ibn Kathir, has been translated as "not even the weight of a speck of dust or less than that or greater escapes His knowledge in the heavens or in the earth but it is in a Clear Book", indicate that, even the particles; including virus particles, are within Allah's knowledge, and have been recorded in the *Lawhul Mahfudh* (the preserved tablet). Furthermore, it has also been translated as atom's weight in other tafsir such as Saheeh International Translation, Muhammad Asad, and Jalaalayn. Similarly, it has been also translated as "the weight of a small ant" in the Saheeh International Translation. All these tafsirs allude that, any particle; in the heavens or earth, is not hidden to Allah (S.W.T); by His knowledge as well as His control.

Further analysis alludes that, the preposition *min/ مِنْ* which has been used in the small phrase *wala aswkar min dhaalika/ وَلَا أَصْغَرَ مِنْ ذَلِكَ* in all these two verses; and which has been translated as "less than that", has also been translated as **part of, from among, to belong to, some of them, and belonging to** in the Hans Wehr Dictionary of Modern Written Arabic. This dictionary also has brought the phrase *thawbu min hariir* and translated it as **garment made from [of] silk**.

These tafsirs alludes that, even a tiny particle that constitute [contained in] any particles are within Allah's knowledge.

This also alludes that, like particles of atoms; that have been identified in particle physics to be composed of other smaller particles such as electrons, neutrons, protons, quarks, and leptons (Brewer et al., 2020; Garcia, 2007; Weinberg, Fisaletti & Sorli, 2006; 2003; Mann & Moris, 1993), the particles of viruses; as described earlier, also are composed of other smaller or tiny particles.

A comprehensive screening from various databases reveal that this study might be the first study to specifically describe how Qur'an has alluded to the wonders of the viruses; such as their sizes, structures, morphologies, their true nature, how they attach to the host cell, penetrating, uncoating, expressing their genome, replicating, assembling, exit; and subsequent disease progression, morbidity, and mortality, by analyzing these two verses. The previous identified studies have described this subject qualitatively by analyzing other verses, particularly Qur'an, 2:26 (Kitota, 2013, Kusumaningrum et al., 2022, Abdul Majid, 2021, Masri, 2021, Mursyid, 2020, Lalu et al., 2020, Al-Osail & Al-Wazzah, 2017 & Al-Jawi, 2006). However, this particular verse alludes to the sizes, structures, morphologies, and other wonders of all small creatures found on the bodies of the mosquitoes; including ectoparasites, namely water mites, or that are harbored in other parts of the mosquito's bodies; such as in their saliva, but does not allude directly to the viruses as the composite particles. The word **dharra/ ذَرَّةٌ** and preposition **min/ مِن** used in the two verses described in this study account for the great difference between these two verses and the verse described in the previous identified studies.

These findings highlight an area of Qur'anic and biological and medical science integration; specifically, the field of Virology, that has received limited attention. This study paves the way to other researchers, encouraging them to explore more deeply on how the verses of the Qur'an have traversed the subject of Virology.

## CONCLUSION

This descriptive qualitative study highlights the miraculous aspects of the Qur'an by uncovering the subject that, under normal circumstance, people might not imagine have been traversed in its verses. The qualitative descriptive analysis provided in this study highlight this miracle. Like particles of atoms and other particles, the viral particles; their wonders, such as their sizes, shapes, structures, morphologies, their true nature, their life cycle [entry (attachment, penetration, intracellular trafficking, and uncoating), gene expression, genome replication, capsid assembly, envelopment, release (exit or budding), maturation]; and subsequent disease progression, morbidity, and mortality, have been alluded directly in the two verses of the Qur'an, that are Qur'an, 10:61 and 34:3. As science and technology

continue to advance, it is imperative for people from various fields of study worldwide to turn towards the Qur'an and integrate their specialized knowledge with its diverse verses. Doing so may help to reveal the miraculous aspects of the Qur'an, thereby strengthening our faith in Allah (S.W.T) and His final Messenger, Muhammad (S.A.W). The comprehensiveness of these verses and their profound insights are inconceivable to have been taught by anyone not receiving divine revelation. It is indeed Allah (S.W.T), the all-knowing, who revealed the Qur'an, rich with miraculous aspects, to His final Messenger, Muhammad (S.A.W).

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