

Research Article

An Interpretation Of Qur'an, 22:73: A Biomedical Perspective

Abdillah Mussa Kitota

Biology department, Muslim University of Morogoro; abdillahikitota@gmail.com,
abdillahikitota@mum.ac.tz

Copyright © 2025 by Authors, Published by Al-Bunyan: Interdisciplinary Journal of Qur'an and Hadith Studies. This is an open access article under the CC BY License <https://creativecommons.org/licenses/by/4.0/>

Received : March 19, 2025
Accepted : May 15, 2025

Revised : April 17, 2025
Available online : June 22, 2025

How to Cite: Abdillah Mussa Kitota. (2025). An Interpretation Of Qur'an, 22:73: A Biomedical Perspective. *Al-Bunyan: Interdisciplinary Journal of Qur'an and Hadith Studies*, 3(1), 128-139. <https://doi.org/10.61166/bunyan.v3i1.60>

Abstract. This was a systematic study design conducted to unravel the implications of the parable: **and if the fly snatches away a thing from them, they will have no power to release it from the fly (Qur'an, 22:73)**. Famous tafseers of Qur'an were used to provide the preliminary interpretation of this verse and the link between this parable to the findings in biomedical sciences. Data concerning what have been implicated in this parable were screened from online biomedical databases such as PubMed, PubMed Central, Google Scholar, and Science Direct. Keywords words and keywords combination used were: fly, house fly, feeding mode of house fly, digestion of house fly, house fly as vectors, house fly + disease transmission, and diseases caused by house fly. Only articles related to fly's feeding, digestion, harboring and transmission of diseases; that were published from 2000 onwards, were selected. More than 100 articles were collected, and Thematic analysis method was used to disclose how the wording of the Qur'an in this parable have traversed the findings in the biomedical sciences. Finally, 40 articles were selected. The findings show that there are two things that a fly can snatches from us; that we will have no power to get them back from it: (1) food, (2) health and life. For

the food, they don't take solid food, rather, they dissolve it before ingestion, then they absorb its liquid. For health and life, they harbor more than 100 pathogens; and transmit more than 100 diseases, that have led to a very great burden of hospitalization, disabilities and loss of lives. This review study may lead to contemplation that will increase faith. It may also help the idol worshippers to abandon their false deities, and turn towards Allah (S.W.T).

Keywords: Qur'an, 22:73, fly, house fly, biomedical perspective, feeding, pathogens, and diseases.

INTRODUCTION

Throughout the entire Qur'an, it has been described; directly and indirectly, that the greatest sin that a person can commit is to worship or submit him or herself to someone or something other than Allah (S.W.T), the one and only true God. Allah (S.W.T) has provided different parables¹ that highlight His existence, greatness and glory; exposing the weaknesses of those who are worshipped and the worshippers.

In the Qur'an, 29:41, He has given the parable of the weakness of a spider's house (spider's web) to show the weakness of those who are worshipped instead of Him. In the Qur'an, 13:14, He has given the parable of the one who stretches out his hand to water so that it reaches his mouth but it does not reach; to show the weakness of those who are worshipped and their complete inability to answer their prayers. In the Qur'an, 16:75, He has given the parable of two individuals: one is a powerless, enslaved person who owns nothing, and the other is a free and generous individual blessed with abundance, sharing it with others. This is an analogy for the stark difference between false deities and Allah (S.W.T), the one true provider.

In the Qur'an, 22:73, He has given the parable of a fly. In this parable, He has provided two challenges; that are universal: includes everyone, anywhere in the world, and they are loud and very clear. The verse says:

يَا أَيُّهَا النَّاسُ ضَرْبَ مَثَلٍ فَاسْتَمِعُوا لَهُ ۚ إِنَّ الَّذِينَ تَدْعُونَ مِنْ دُونِ اللَّهِ لَنْ يَخْلُقُوا ذُبَابًا وَلَوْ اجْتَمَعُوا لَهُ ۚ وَإِنْ يَسْلُبْهُمُ الذُّبَابُ شَيْئًا لَا يَسْتَنْقِذُوهُ مِنْهُ ۚ ضَعُفَ الطَّالِبُ وَالْمَطْلُوبُ

O mankind! A parable has been made, so listen to it: Verily, those on whom you call besides Allah, cannot create a fly, even though they combine together for the purpose. And if the fly snatches away a thing from them, they will have no power to release it from the fly. So weak are the seeker and the sought.

The first challenge:

¹ A simple story used to illustrate a moral or spiritual lesson.

The first challenge is that those who are worshipped cannot create even a fly; even if they gathered together to cooperate in the task, they would not be able to do so. All false deities, whether they are idols or statues, values and traditions, or human beings; to whom you appeal for support and with whom you seek to achieve victory and high status, are incapable of creating a fly, even if they muster all their powers, utilize all their knowledge and skills and channel all their resources into one greater effort. Indeed, the creation of a mere fly; that is among the small creatures, defies all the harnessed powers of such false gods. According to the signs that Allah (S.W.T) has shown us through the researches in biomedical sciences, as in all of His creations, the impossibility of creating a fly is due to its complex form; externally and internally, its organs and systems; including the digestive system, reproductive system, and their complete life cycle.

The second challenge:

The second challenge is that even if a fly snatches (takes) away a thing from them, they will have no power to get (release) it from it. Rather, it is He who can return it to them. Therefore, it is He who should be worshipped.

On this basis, the specific focus of this review study is not to provide a detailed interpretation of the complexity of the creation of a fly in general; which is the case for challenge number 1, but rather to provide a detailed interpretation of the challenge number 2, which is to uncover the biomedical implication of the statement of Allah (S.W.T): **and if the fly snatches away a thing from them, they will have no power to release it from the fly (Qur'an, 22:73)**. Therefore, by using the signs that Allah (S.W.T) has shown us through various studies in biomedical sciences, such as Biology and Medicine, this review study answer the question that what is the implication behind Allah's parable **and if the fly snatches away a thing from them, they will have no power to release it from the fly?** It is hoped that it may add value to the general understanding of the existence, greatness, and glory of Allah (S.W.T) to the people, which in turn, under His will, may lead to contemplation that will increase their faith, and help the idol worshippers to abandon their false deities, and turn towards Allah (S.W.T). It may also generate the interest of other scholars to mount further research in this subject.

METHODOLOGY

This study was the systematic study design conducted to uncover the biomedical implication of the parable given by Allah (S.W.T): **and if the fly snatches away a thing from them, they will have no power to release it from the fly (Qur'an, 22:73)**. The Tafsir Al Qur'an Al 'Adhwim by Al Imam ibn Kathir was used to provide the preliminary interpretation of this verse. Data concerning biomedical signs that have been implicated in this parable were screened from major medical and medical-related electronic databases: **PubMed, PubMed Central, Google Scholar, and Science Direct**. Keywords and keywords combination used were: fly, house fly, feeding mode of house fly, digestion of house fly, house fly as vectors, house fly + disease transmission, and diseases caused by house fly. Only articles related to fly's feeding, digestion, vector and transmission of diseases and that were published from

2000 onwards were selected. Of more than 100 articles screened by bibliographic search, 40 articles were included in the review. Eight tafseers such as tafsir al Qur'an al 'Adhwim by al Imam ibn Kathir, *Fii Dhawilaalil Qur'an* (In the Shade of Qur'an) by Said Qutb, Tafsir ibn Abbas associated with ibn 'Abbas (R.A), tafsir al Tabari by al Imam at Tabari, al Jaamiul ahkaamil Qur'an by al Imam al Qurtubi, Tafsir Jalalain by Jalal ad-Din As-Suyuti and Jalal ad-Din al Mahali, Tafhimul Qur'an by Abul Ala Maududi, and The Message of Qur'an by Muhammad Asad were used to examine the link between the tafsir of this parable and the signs in biomedical sciences. Then Qur'anic and biomedical data were analyzed by Thematic approach; to uncover how the wording of the Qur'an in this parable have traversed the findings in the biomedical sciences.

FINDINGS AND DISCUSSION

To the best of my knowledge, this study might be the first study to uncover the implication of the parable **and if the fly snatches away a thing from them, they will have no power to release it from the fly** by integrating the Qur'an and signs that Allah (S.W.T) has shown us through various researches in biomedical sciences. The available related studies have reported on the mention and diversity of the insects in the Qur'an (Fajar, 2025; Mushtaq and Rafeh, 2024; Rochmad *et al.*, 2023; Akrom and Rhain, 2023; Nasution *et al.*, 2020; Riyaz, 2021; Ain, 2019; Robinson, 2018), insects ethics (Tlili, 2024a; Tlili, 2024b), halal implication and certification of insect based food (Jamaludin *et al.*, 2021; Tajudeen, 2020), and the Hadith about dipping the house fly when it falls in the liquids (Mufid *et al.*, 2023; Asril *et al.*, 2022; Yassin *et al.*, 2021; Claresta *et al.*, 2020; Zinger, 2016; Atta, 2014).

On the other hand, in the present study, the thematic analysis of this parable in relation to what has been reported in 26 collected biomedical research papers, has uncovered the two major implications regarding this parable.

First implication: feeding and digestion of a fly

The findings show that all true flies (order Diptera) share the common biological characteristics (Yarger *et al.*, 2021). But because house flies are the most widely distributed and most common fly that interact with humans (Khamesipour *et al.*, 2018), this nature direct us to the consideration that, even though the verse under review encompasses all the true flies placed in the insect order Diptera, but specifically, it is referring to the house flies.

The common domestic fly is house flies (*Musca domestica* L) (Diptera: Muscidae). Both male and female house flies consume all types of human foods: garbage, animal dung, excreta, and sweats. They eat any wet or decaying matter but are well attracted to the foods that have strong smell. Other sources of food of house fly include syrup, milk, meat broth and many other materials found in human settlement areas. The demand for food in house fly is two or three times a day (Iqbal *et al.*, 2014).

Adult house flies have spongy mouthparts and hence must eat either liquid food or regurgitate crop contents onto solid foods to soften them before ingestion. Even though flies can feed only on liquid food but they can also feed on many solid

foods by changing them into a liquid through spitting or vomiting on them or readily dissolving them in the salivary gland secretions or in the crop (a storage part of the insect foregut in which the ingested substances are pre-digested with salivary amylase prior to digestion in the midgut). Liquid food is sucked up and solid food is liquified (wetted) with saliva so that it could easily be dissolved before ingestion (Geden *et al.*, 2021; Kweka *et al.*, 2017; Iqbal *et al.*, 2014).

To accomplish this, bubbling is their common practice. In this practice, flies expel a droplet of regurgitate. It is considered to eliminate excess water, thence, concentrating the nutrients in the ingested food and minimizing the weight that flies must carry during their flight. It may also play a vital role in thermoregulation process. A droplet is sometimes deposited in the environment, leading to accumulations of both regurgitation and fecal spots on the surfaces where flies reside. The relative quantity of regurgitation spots differs depending on the quality of the food ingested. Flies that have consumed the nutrient dense foods like liquid milk, blood, and high concentrated sugar liquids tend to produce fewer regurgitation spots compared to flies that consumed the foods that are of lower nutrient density (Nayduch and Gurru, 2017; Geden *et al.*, 2021; Iqbal *et al.*, 2014). Water is a necessary part of their diets; as they cannot live without water for more than 48 hours (Ali *et al.*, 2024). By these signs, even if you grab it and try to retrieve the food, you can never get it. Furthermore, transfer of regurgitation and fecal spots to different surfaces plays a significant role in the transmission of pathogens; as described in the second implication.

Second implication: House fly as vectors

During each stage of their life cycle (larvae, pupae, and adults), house flies are tightly associated with microbes (Park *et al.*, 2019). Their habitats, indiscriminate movement, ability to fly long distance, their regular association (contact) with carcasses, garbage, excreta, and some other septic matter, as well as intimate association with humans and animal pathogens all contribute to their ability to carry a large diversity of the humans and animal pathogens, that in turn, contribute to the significant roles in transmission of different diseases (Khamesipour *et al.*, 2018; Scott *et al.*, 2014). Throughout the human history, these diseases have caused large burden all over the world, in terms of diseases, treatment costs, disability, and loss of lives (mortality).

It has been reported that, worldwide, vector-borne diseases account for more than 17% of all infectious diseases, causing more than 700,000 deaths each year, with high prevalence in tropical and subtropical regions (WHO, 2024; Khamesipour *et al.*, 2018). There is no clear surveillance that shows number of morbidity and mortality due to the diseases transmitted by the house fly. However, in USA alone, the diseases transmitted by house fly cost up to 1 billion USB per year (Geden *et al.*, 2021). Furthermore, trachoma transmitted by the flies alone has been reported to causes 6 million cases of childhood blindness each year (Scott *et al.*, 2014). That's why the parable says: **"and if the fly snatches away a thing from them, they will have no power to release it from the fly."**

When adult house flies interact with microbe rich environment (substrates), they become contaminated with microbes on their external surfaces. Microbes on the fly's head, mouthparts (proboscis), thorax, wings, legs (tarsi), and the abdomen (**Figure 1**) are removed and transferred to the areas housefly subsequently visit by direct contact (i.e., mechanical transmission), feeding (i.e., contaminated mouthparts), and/or grooming (i.e., removal and disposal). Quiet surprisingly, bacteria contaminated within the external surfaces of the house fly may have an increased opportunity for protection that enables their survival for long time. For example, for *Escherichia coli* O157:H7, they have been reported to survive for about 13 days after exposure (Nayduch *et al.*, 2023).

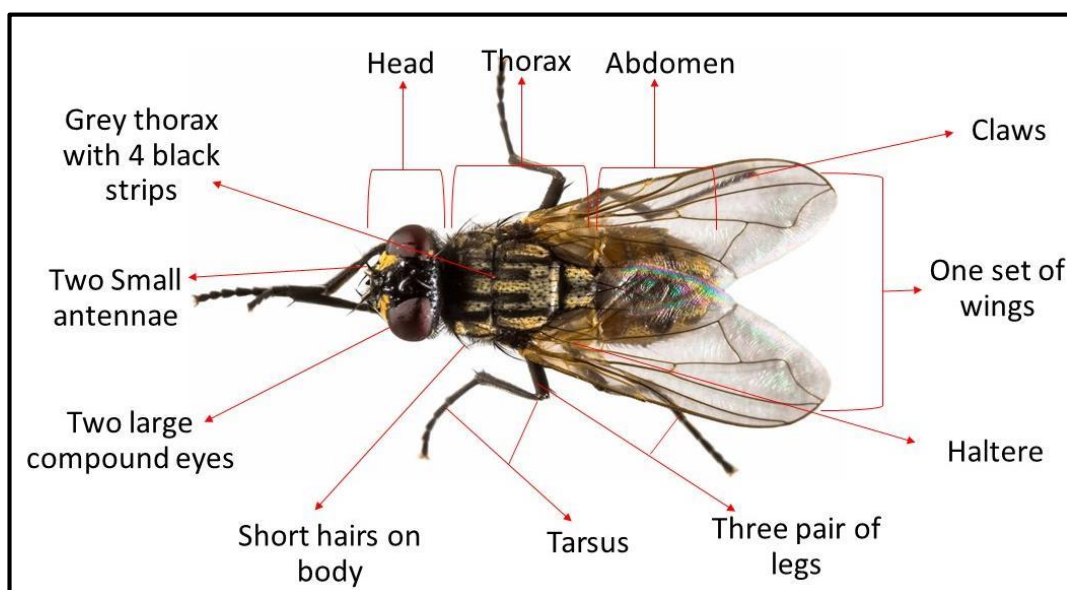


Figure 1: The body morphology of house fly. Adopted from Ali *et al.*, 2024.

House fly also harbors microbes internally within their gut, acquired either indirectly when auto grooming or directly by intentionally ingesting the food from the microbe rich substrate (Nayduch and Gurru, 2017; Geden *et al.*, 2021). Ingestion of bacteria has been more often observed in female flies, that visit and interact with substrates like dumpster sludge and manure, as their potential sites for oviposition (Nayduch *et al.*, 2023). After ingestion, microbes may be stored in the crop; from where they can be regurgitated, or the midgut; where they face hostile digestive and defensive environments (**Figure 2**). Bacteria that survive these midgut environments may pass through the digestive system and released out to the environment through defecation (Geden *et al.*, 2021). Furthermore, studies show that internal bacterial communities of individual house flies constitute about 400 bacterial taxa, while other studies that have used the next generation sequencing of whole flies (accounting for internal and external bacteria) have reported that an individual fly can harbor more than 1600 operational taxonomic units (Nayduch *et al.*, 2023).

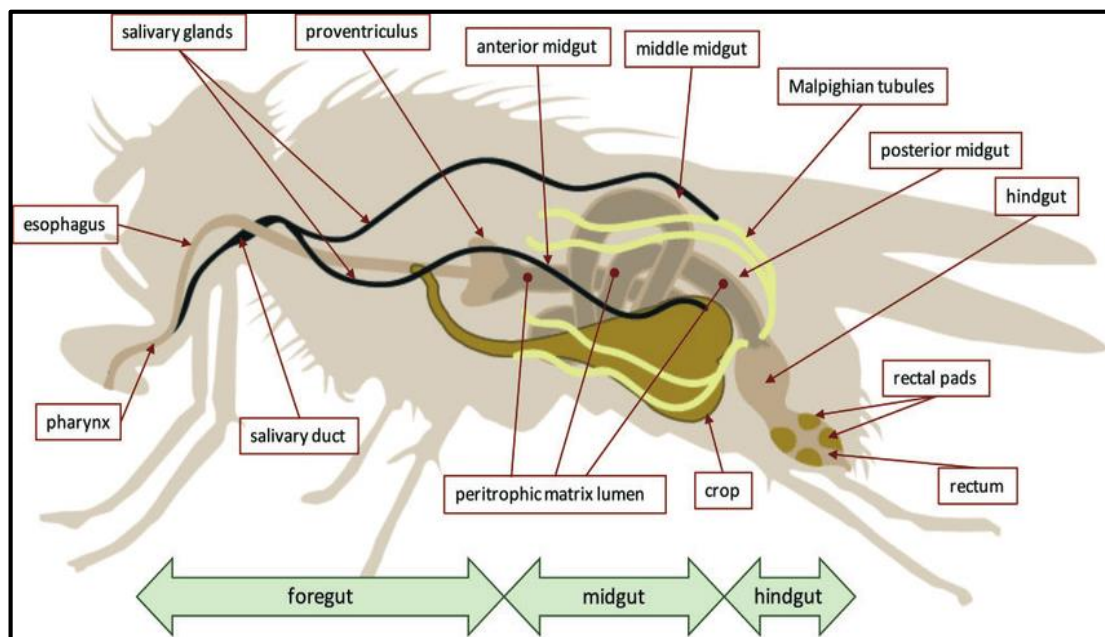


Figure 2: The digestive system of house fly. Liquid food, normally premixed with saliva, is taken up through the pharynx, esophagus to the crop, that is part of the foregut, or via the proventriculus to the midgut. The crop can pinch (contract) to expel liquids in vomitus. But the food that pass through the proventriculus are incased in the peritrophic matrix (PM) and cannot be regurgitated. The PM is made by the cardia, an area of specialized cells that is near to the proventriculus. PM stretches throughout the midgut after which it is mechanically degraded by teeth-like protrusion on the hindgut luminal cuticle (not indicated). Large food gragments and bacteria are contained within the PM through size exclusion. Digestion occurs in the lumen and minute molecules pass across the PM to be absorbed by the midgut epithelium. Ingested food and waste products proceed posteriorly through the midgut by peristalsis and join metabolic waste excreted by the Malpighian tubules. Water reabsorption takes place in the hindgut and rectum. Regulation of feces entry into the rectum is done by the rectal valve (not shown), and rectal pads likely assist in eliminating waste from the rectum as well as water absorption. In the foregut and hindgut, epithelial cells of the fly digestive system are protected from ingested bacteria by a cuticular lining. Therefore, throughout the digestive system, bacteria ingested by house flies are never in direct contact with the epithelium. Adopted from Nayduch and Burrus, 2017.

Furthermore, culture-based and more recently (i.e., from the past 20 years) molecular based assays have uncovered that, house flies; of both urban and agricultural settings, are reservoirs, disseminators, and true, yet facultative, vectors for pathogens. Over 200 different species of microbes have been identified from house flies (Nayduch and Burrus, 2017); whereby, one house fly can harbor up to 100 different pathogenic microbes (Greenberg 1973 in Geden *et al.*, 2021). Other studies have reported that, housefly can harbor more than 100 human and animal pathogens, that cause more than 100 human and animal devastating diseases (table 1).

Table 1: Summary of the pathogens, diseases, and references.

S/No.	PATHOGENS	DISEASE	REFERENCE
1	Bacteria	Salmonellosis, Ophthalmia, Tuberculosis, Anthrax, Shigellosis, Cholera, Infantile diarrhea, Typhoid fever, Eye diseases: Epidemic conjunctivitis, and Trachoma etc. Rickettsial infections Dysentery	Nayduch <i>et al.</i> , 2023; Alsaad, 2023; Berteloni <i>et al.</i> , 2023; Olagunju, 2022; Geden <i>et al.</i> , 2021; Khamesipour <i>et al.</i> , 2018; Kweka <i>et al.</i> , 2017; Sarwar, 2015; Scott <i>et al.</i> , 2014; Igbal <i>et al.</i> , 2014. Olagunju, 2022.
2	Protozoa	Amebic dysentery	Scott <i>et al.</i> , 2014
3	Helminths	Roundworms, Pinworms, Tapeworms, and Hookworms	Scott <i>et al.</i> , 2014;
4	Fungi	Acute and chronic toxicity, mutagenicity and teratogenicity.	Phoku <i>et al.</i> , 2014, Phoku, 2015, Banjo <i>et al.</i> , 2005
5	Virus	SARS-CoV-2, polio, Rota virus infections, viral hepatitis, poliomyelitis etc.	Soltani <i>et al.</i> , 2021, Issa, 2019
6	Deadly strain of <i>E. coli</i> O157:H7	Diarrhea, Hemorrhagic colitis, and Hemolytic-uremic syndrome (HUS).	Lim <i>et al.</i> , 2010; Macovei <i>et al.</i> , 2006; Sasaki <i>et al.</i> , 2000;
7	Life threatening multi-drug resistant bacteria.	Endocarditis, Skin, Respiratory tract, soft tissue infections, and Infections of pleuro-pulmonary-related devices.	Scott <i>et al.</i> , 2014. Berteloni <i>et al.</i> , 2023; Scott <i>et al.</i> , 2014.

However, this study has identified five tafseers of the glorious Qur'an that disclose the implication of this parable in the line of biochemical sciences. Tafsir ibn 'Abbas (R.A) [translated by Mokrane Guezzou] by Ibn 'Abbas (R.A), Al Jaamiul Ahkaamil Qur'an by al Imam al Qurtubi, tafsir al Qur'an al 'Adhwim by al Imam ibn Kathir, tafsir at Tabari by al Imam at Tabari, and Fii Dhawilaalil Qur'an [In the Shade of Qur'an] by Said Qutb, that has linked this parable with the first and second implication respectively.

In Tafsir ibn 'Abbas (R.A), it has been stated that: **and if the fly took something like honey with which are sullied for example (from them) from the deities, the deities would not be able to take it back from the fly (they could not rescue it from it).** This tafsir is in line with the first implication.

In Al Jaamiul Ahkaamil Qur'an it has been reported that: Ibn Abbas (R.A) said: **They used to smear their idols with saffron and it would dry. And flies would come and land on those idols. As Sudi (R.A) said: They used to put food on their idols, then flies would land on those idols and eat on that food.**

In tafsir at Tabari, it has been reported that: **If a fly steal something from their gods' ornaments, their gods cannot get it back.**

In the tafsir al Qur'an al 'Adhwim, it has been reported that: **They are unable to resist it or take revenge against it if it were to take anything from the good and perfumed thing on which it lands. If they wanted to recover that, they would not be able to, even though the fly is the weakest and most insignificant of Allah's creatures.** This tafsir is in line with the 1st implication.

In Fii Dhawilaalil Qur'an, it has been stated that: **flies can rob people of that which is precious indeed. At the same time, a fly carries agent of some very serious diseases, such as tuberculosis, typhoid, dysentery and conjunctivitis. It can deprive a person of his eyes or other organs, or indeed deprive him of his life. A weak and contemptible fly can rob a human being of what he can never retrieve.** This tafsir is in line with this second implication.

On the other hand, other tafseers such as Tafsir Jalalain by Jalalain, Tafhimul Qur'an by Abul Ala Maududi, and The Message of Qur'an by Muhammad Asad have not provided a direct linkage between the two. Absence of this linkage in these tafseers may be due to the two main reasons: (1) by the time these interpreters wrote their translations, Allah (S.W.T) had not yet shown these signs to the experts in the field of Biology and Medicine. (2) those who wrote their translations after Allah (S.W.T) showed these signs to mankind, they were either not experts in the field of Biology and Medicine or they did not come across these signs; that's why they did not include these signs in their translations.

The greatest challenge in writing the present study was unavailability of the studies that have linked these two aspects: this parable and the signs from the studies in biomedical sciences. Because this study seems to be the first study to uncover these signs from this parable. This may generate the interest of other scholars to mount further research in this subject.

CONCLUSION AND RECOMMENDATION

This review study shows us the existence, greatness, and glory of Allah (S.W.T); in the creation of His creatures, both large and small. Generally, the findings of this review study show the weaknesses of all creatures, and specifically, show the weaknesses of those who are worshipped and the worshippers, i.e., those who worship others by asking them, seeking help from them, seeking refuge from them etc. Because they are completely incapable of providing these services. On the other hand, these services are provided by the one and only provider, who is Allah (S.W.T). This review study is part of a call and a reminder to the whole world to worship our Lord, and for those who are worshipping other than Him to stop doing that. For, it is the fact that He sees all of us and everything we are doing is being recorded. For those who will die in a state of worshipping other than Him, He has promised a very severe punishment in the hereafter.

REFERENCES

- Ain, N. (2019). Theorems in Qur'an about the creation of insects and its diversity in Taman Undaan Surabaya. *Journal Intellectual Sufism Research (JISR)*, 1(2), 5-10.
- Akrom, M. F. K., & Rhain, A. (2023). Queen of Ants In the Qur'an Surah An-Naml verse 18. *Proceeding ISETH (International Summit on Science, Technology, and Humanity)*, 1388-1391.
- Ali, R. M. M., Bashir, M. H., Haq, S. U., Ali, B., Akbar, F. A., Fatima, H., ... & Mehmoodio, K. (2024). The house fly (*Musca domestica* L.): A comprehensive review of Biology, Genetics, Disease vector potential, and Methods of control. *European Chem. Bull*, 13(Regular Issue 5), 10 - 25. DOI: 10.53555/ecb/2024.13.05.02.
- Alsaad, R. (2023). Control study of *Musca domestica* (Diptera, Muscidae) in Misan Province. *F1000Research*, 12, 459.
- Asril, M., Rini, I. A., Oktaviani, I., & Mushaliyah, M. (2022). Tracking the source of antimicrobial production from house fly (*Musca domestica*): right-wing of fly or gut system?-a mini-review. *Elkawanie: Journal of Islamic Science and Technology*, 7(2), 225-238.
- Atta, R. M. (2014). Microbiological studies on fly wings (*Musca domestica*) where disease and treat. *World Journal of Medical Sciences*, 11(4), 486-489.
- Banjo, A. D., Lawal, O. A., & Adeduji, O. O. (2005). Bacteria and fungi isolated from housefly (*Musca domestica* L.) larvae. *African Journal of biotechnology*, 4(8), 780-784.
- Bertelloni, F., Bresciani, F., Cagnoli, G., Scotti, B., Lazzerini, L., Marcucci, M., ... & Ebani, V. V. (2023). House flies (*Musca domestica*) from swine and poultry farms carrying antimicrobial resistant Enterobacteriaceae and Salmonella. *Veterinary Sciences*, 10(2), 118.
- Boulesteix, G., Le Dantec, P., Chevalier, B., Dieng, M., Niang, B., & Diatta, B. (2005, April). Role of *Musca domestica* in the transmission of multiresistant bacteria in the centres of intensive care setting in sub-Saharan Africa. In *Annales Francaises D'anesthesie et de Reanimation* (Vol. 24, No. 4, pp. 361-365).

- Claresta, I., Sari, D. D., Nurohmi, S., & Damayanti, A. Y. (2020). The right-wing of fly (*Musca domestica*) as a neutralization of drinks contaminated by microbe. *Journal of nutritional science and vitaminology*, 66(Supplement), S283-S285.
- Fajar, M. (2025). Flies in the Qur'an Perspective of Tafsir Ilmi. *Jurnal Cakrawala Akademika*, 1(5), 1675-1683.
- Geden, C. J., Nayduch, D., Scott, J. G., Burgess IV, E. R., Gerry, A. C., Kaufman, P. E., ... & Machtinger, E. T. (2021). House fly (Diptera: Muscidae): biology, pest status, current management prospects, and research needs. *Journal of Integrated Pest Management*, 12(1), 39.
- Greenburg, B. (1973). Flies and Disease. Vol. 11, Biology and Disease Transmission.
- Iqbal, W., Malik, M. F., Sarwar, M. K., Azam, I., Iram, N., & Rashda, A. (2014). Role of housefly (*Musca domestica*, Diptera; Muscidae) as a disease vector; a review. *Journal of Entomology and Zoology studies*, 2(2), 159-163.
- Issa, R. (2019). *Musca domestica* acts as transport vector hosts. *Bulletin of the National Research Centre*, 43(1), 1-5.
- Jamaludin, M. A., Khairuzzaman, M. W., & Sani, M. S. A. (2021). Black soldier fly larvae as animal feed: implications on the halal status of meat products. *Halalsphere*, 1(1), 32-42.
- Khamesipour, F., Lankarani, K. B., Honarvar, B., & Kwenti, T. E. (2018). A systematic review of human pathogens carried by the housefly (*Musca domestica* L.). *BMC public health*, 18, 1-15.
- Macovei, L., & Zurek, L. (2006). Ecology of antibiotic resistance genes: characterization of enterococci from houseflies collected in food settings. *Applied and Environmental Microbiology*, 72(6), 4028-4035.
- Mufid, A., Sattar, A., & Rifai, I. A. (2023). Track Dating Hadith Fly Wings: A Study of Harald Motzki's Isnad cum Matn Method and Science. *ESENSIA: Jurnal Ilmu-Ilmu Ushuluddin*, 24(1), 15-29.
- Mushtaq, K., & Rafeh, A. (2024). Factual Study of Qur'anic Fauna and Flora. *Tanazur*, 5(2), 430-459.
- Nasution, I. F. A., Mufid, A., Kisno, K., Amin, M., Jayanto, I., Sumanti, S. T., ... & Bashori, I. A. (2020). Animals Mentioned In The Islam's Prophetic Traditions: A Review Of The Scientific Evidence. *International Journal of Pharmaceutical Research*, 12(4).
- Nayduch, D., & Burrus, R. G. (2017). Flourishing in filth: house fly-microbe interactions across life history. *Annals of the Entomological Society of America*, 110(1), 6-18.
- Nayduch, D., Neupane, S., Pickens, V., Purvis, T., & Olds, C. (2023). House flies are underappreciated yet important reservoirs and vectors of microbial threats to animal and human health. *Microorganisms*, 11(3), 583.
- Olagunju, E. A. (2022). Housefly: Common zoonotic diseases transmitted and control. *Journal of Zoonotic Diseases*, 6(1), 1-10.
- Park, R., Dzialo, M. C., Spaepen, S., Nsabimana, D., Gielens, K., Devriese, H., ... & Verstrepen, K. J. (2019). Microbial communities of the house fly *Musca domestica* vary with geographical location and habitat. *Microbiome*, 7, 1-12.

- Phoku, J. Z. (2015). *Investigation of fungal dissemination by Housefly (Musca domestica L.) and contamination of food commodities in selected rural areas in South Africa*. University of Johannesburg (South Africa).
- Phoku, J. Z., Barnard, T. G., Potgieter, N., & Dutton, M. F. (2014). Fungi in housefly (*Musca domestica* L.) as a disease risk indicator—A case study in South Africa. *Acta Tropica*, 140, 158-165.
- Riyaz, M. (2021). A Comprehensive Account on the Insect Diversity Potrayed in the Holy Qur'an. *Journal of Islam and Science*, 8(2), 118-127.
- Robinson, N. (2018). Islam: Ants, Birds, and Other Affable Creatures in the Qur'an, Hadith, and Sufi Literature. In *The Routledge Handbook of Religion and Animal Ethics* (pp. 80-90). Routledge.
- Rochmad, R., Fitriani, F., Sylvia, N., Shopia, A., & Dyah, Y. (2023). Al-I'jāz al-Ilmī'an Khalqī aẓ-ẓubab fī Al-Qur'an'inda Ṭanṭāwī Jauharī: الإعجاز العلمي عن خلق الذباب في القرآن عند طنطاوي جوهري. *ZAD Al-Mufasssir*, 5(1), 166-183.
- Sasaki, T., Kobayashi, M., & Agui, N. (2000). Epidemiological potential of excretion and regurgitation by *Musca domestica* (Diptera: Muscidae) in the dissemination of *Escherichia coli* O157: H7 to food. *Journal of medical entomology*, 37(6), 945-949.
- Scott, J. G., Warren, W. C., Beukeboom, L. W., Bopp, D., Clark, A. G., Giers, S. D., ... & Liu, N. (2014). Genome of the house fly, *Musca domestica* L., a global vector of diseases with adaptations to a septic environment. *Genome biology*, 15, 1-17.
- Soltani, A., Jamalidoust, M., Hosseinpour, A., Vahedi, M., Ashraf, H., & Yousefinejad, S. (2021). First molecular-based detection of SARS-CoV-2 virus in the field-collected houseflies. *Scientific Reports*, 11(1), 13884.
- Tajudeen, A. L. (2020). Halal certification of insect-based food: a critique. *IJIBE (International Journal of Islamic Business Ethics)*, 5(2), 100-112.
- Tlili, S. (2024). An Islamic case for insect ethics. In *Animals and religion* (pp. 112-116). Routledge.
- Tlili, S. (2024). Recent Debates on Insect Ethics and Welfare. *Animals and Religion*.
- World Health Organization. (2024, September 26). Vector-borne diseases. <https://www.who.int/news-room/fact-sheets/detail/vector-borne-diseases>.
- Yarger, A. M., Jordan, K. A., Smith, A. J., & Fox, J. L. (2021). Takeoff diversity in Diptera. *Proceedings of the Royal Society B*, 288(1942), 20202375.
- Yassin, D. M. S., Al-Dulaimi, F. A. M. A., Yassin, M. S., & Al-Dulaimi, F. A. M. A. (2021). Quranic scientific and health miracles in creating flies, and its role in confronting atheism. *PalArch's Journal of Archaeology of Egypt/Egyptology*, 18(4), 4141-4163.
- Zinger, O. (2016). Tradition and Medicine on the Wings of a Fly. *Arabica*, 63(1-2), 89-117.