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Khalid Usman
Department of Zoology,
Hazara University, Mansehra, Khyber
Pakhtunkhwa, Pakistan

Ayesha Siddique
Department of Environmental Sciences,
University of Gujrat

Yumna Sadef
College of Earth and Environmental
Sciences, University of Punjab

Hameed Ur Rehman
Department of Chemistry,
Kohat University of Science &
Technology, Pakistan

Asif Junaid
Department of Zoology,
Kohat University of Science &
Technology, Pakistan

Saadullah Khattak
Department of Microbiology, Hazara
University, Mansehra

MansoorZaman
Department of Pharmaceutics, Faculty
of Pharmacy, Gomal University, D.I.
Khan

Faiqa Falak Naz
Department of Pharmaceutics, Faculty
of Pharmacy, Gomal University, D.I.
Khan

Rafiq Ahmad
Department of Microbiology, Hazara
University, Mansehra

Ikram Ali
Department of Microbiology, Hazara
University, Mansehra

Waqar Ahmad
Department of Microbiology, Abbotabad
University of Science and Technology,
Abbotabad

Ihtisham UIHaq
Department of Microbiology, Kohat
University of Science & Technology,
Pakistan

Corresponding
Hameed Ur Rehman
Department of Chemistry, Kohat
University of Science and Technology,
KUST, Kohat, KP, Pakistan

Monitoring of mosquito fauna (Insecta: Diptera) from Chokara district Karak Khyber Pakhtunkhwa, Pakistan

Khalid Usman, Ayesha Siddique, Yumna Sadef, Hameed Ur Rehman, Asif Junaid, Saadullah Khattak, Mansoor Zaman, Faiqa Falak Naz, Rafiq Ahmad, Ikram Ali, Waqar Ahmad and Ihtisham UI Haq

Abstract

A study on mosquito fauna of the Chokara area of District Karak was carried out for the period of 3 years from January 2013 to January 2016. Mature and immature (male/females) mosquito fauna was collected from the selected zone of the study. A total number of 3479 mosquitoes belonging to 8 species of 3 genera were identified by keys and available literature. The dominant Genus was *Culex* and *Anopheles* with having 37.5% each and was followed by the one important vector *Aedes* with (25%). The species collected and identified were *Culex quinquefasciatus*, *C. mimeticus*, *C. theileri*, *Anopheles maculatus*, *A. stephens*, *A. annularis*, *Aedes albopictus* and *A. shortii*. From the current survey, it can be concluded that this zone (Chokara) of the District inhabits variety fauna of mosquito. Proper controlling steps should be taken to stop further growth of mosquito's population otherwise it may be very harmful in the disease spreading like Malaria and Dengue fever.

Keywords: Mosquito, Chokara, identification, family, vector, Malaria

1. Introduction

Mosquitoes are found in all types of environments associated with water, such as sewage water, stagnant water, septic tanks, etc. There is an urgent need to check the proliferation of population of vector and non-vector mosquitoes in order to reduce vector borne diseases and their nuisance by using appropriate control methods [1]. Diptera represents one of the largest orders of insects with more than 85,000 species, including a large number of disease vectors [2]. Mosquitoes are found throughout the world except in places that are permanently frozen. Altogether 3150 species of mosquitoes have been reported globally [3-5]. The management of mosquitoes requires to collect adequate knowledge about the species diversity and distribution pattern in a given area in order to evolve suitable strategies and to implement the same for the meaningful control of the population and in turn to reduce the menace and the incidence of the disease [6]. Mosquito constitutes the most important single family of insects that affect the human health everywhere [7]. The voracious feeding habit, high fecundity rate, dispersal potential and successful exploitation of the environment are the causes for proliferation of these mosquitoes throughout the world [8]. Khalid *et al.* in 2017 conducted study on mosquito fauna in Babel Khel District Karak Khyber Pakhtunkhwa, Pakistan and identified 6 different species of mosquito [9]. Similar studies were conducted by Khalid *et al.* in 2017 on the mosquito fauna of Amin Khel district Karak, Khyber Pakhtunkhwa, Pakistan and reported 5 species and again Khalid *et al.* in 2017 discuss the mosquitoes fauna of Dingerwala District Karak Khyber Pakhtunkhwa, Pakistan and recorded 5 species as well as from Masti Khel same authors in 2017 reported 8 species of mosquitoes [10-12]. The aim of the research work was to find out the mosquito diversitic Fauna (Insecta: Diptera) from Chokara District Karak Khyber Pakhtunkhwa, Pakistan.

Materials and Methods

Study Area

Chokara is situated in District Karak Khyber Pakhtunkhwa Pakistan.

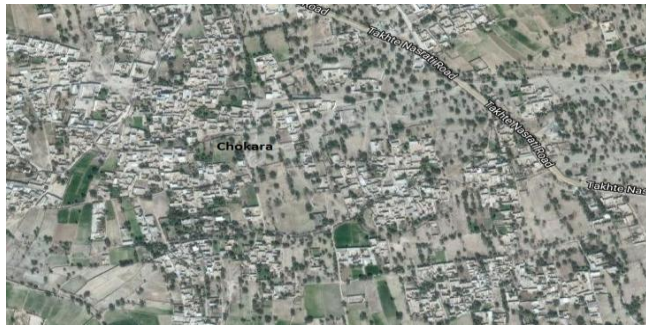


Fig 1: Map of Chokara site of District Karak Khyber Pakhtunkhwa, Pakistan.

Collection and Identification

A study on mosquito fauna of the Chokara area of District Karak was carried out for the period of 3 years from January 2013 to January 2016. Mature and immature (male \females) mosquito fauna was collected from the selected zone of the study. Only outdoor collections were made in the present study. Immature forms of mosquitoes were collected by dipper method [13] from the temporary pools and other breeding sources in the study area and the emerged adults were preserved in plastic vials for later identification. The resting adults were collected from the cattle shed using aspirator and from the bushes using sweep net. The biting adults were collected between 6 to 8 pm by the method followed by Pandian [14] near human dwellings and cattle shed. The collected specimens were later identified by using the standard keys of Barraud (1934) [15] and Christopher (1933) [16].

Results and Discussion

Mosquito fauna were collected from the whole study area of Chokara District Karak Khyber Pakhtunkhwa Pakistan. The collection was carried out especially at the time of 6-8 pm. The collected and identified species were *Culex quinquefasciatus*, *C. mimeticus*, *C. theileri*, *Anopheles maculates*, *A. stephensi*, *A. annularis*, *Aedesalbopictus* and *A. shortii* shown in Table.1 and Figure 2. A total number of 3479 mosquitoes belonging to 8 species of 3 genera were identified by keys and available literature. The dominant Genus was *Culex* and *Anopheles* with 37.5% each followed by the one important vector *Aedes* with (25%) respectively. All the identified species of mosquitoes were properly arranged in a systematic way. From the current study it was revealed that Chokara inhabits much diverse fauna of mosquito. Sathe and Girhe (2001) [17] observed composition of nine species belonging to three genera *Culex*, *Anopheles* and *Aedes* in Kolhapur district. There may be close resemblance during comparison which may be due to same climatic factors, etc. Shinde *et al.*, (2011) [18] identified three important genus *Aedes*, *Anopheles* and *Culex* in Parbhani district in the Marathwada region, while in the current study conducted in Chokara District Karak comprising the same Genus as recorded in the previous work. These both results revealed that the similarity index shows same land topography features of both the study area. Jaid *et al.*, (2011) [19] reported of mosquito diversity and population dynamics around Nagpur city of Maharashtra. In the present survey the genus *Anopheles* was also recorded and was identified up to the species level as shown in Table.1 and in Figure 2.

Table 1: Exploring of mosquito fauna in Chokara District Karak Khyber Pakhtunkhwa Pakistan.

S. No	Class	Order	Family	Genus	Species
1	Insecta	Diptera	Culicidae	<i>Culex</i>	<i>C. quinquefasciatus</i>
2	Insecta	Diptera	Culicidae		<i>C. mimeticus</i>
3	Insecta	Diptera	Culicidae		<i>C. theileri</i>
4	Insecta	Diptera	Culicidae	<i>Anopheles</i>	<i>A. maculatus</i>
5	Insecta	Diptera	Culicidae		<i>A. stephensi</i>
6	Insecta	Diptera	Culicidae		<i>A. annularis</i>
7	Insecta	Diptera	Culicidae	<i>Aedes</i>	<i>A. albopictus</i>
8	Insecta	Diptera	Culicidae		<i>A. shortii</i>
Total	01	01	01	03	08

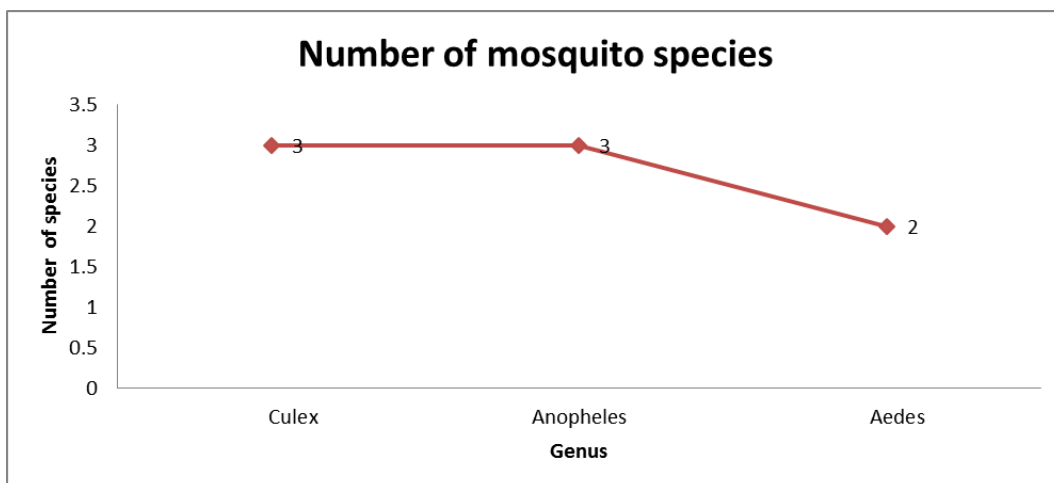


Fig 2: Genus wise mosquito fauna in Chokara District Karak Khyber Pakhtunkhwa, Pakistan.

Conclusion

From the present research it was concluded that Chokara inhibits a variety of mosquito fauna which are the main vector of Malaria and Dengue fever. Furthermore, maximum fauna of the mosquito were collected beneath the shady trees, used tires stock and standing water.

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