Sporozoite Infection Rate of Female Anopheles Mosquitoes in Toro Lga, Bauchi State, Nigeria

Auwal, M. M.
Department of Zoology Faculty of Natural Sciences, University of Jos, Plateau State

Matur, B. M.
Department of Zoology Faculty of Natural Sciences, University of Jos, Plateau State

James-Rugu, N. N.
Department of Zoology Faculty of Natural Sciences, University of Jos, Plateau State

Saeed, U. A.
Department of Zoology Faculty of Natural Sciences, University of Jos, Plateau State

Dazang, S. U.
Department of Zoology Faculty of Natural Sciences, University of Jos, Plateau State

Nasir, A. Y.
College of Sciences and Technologies for Energy and the Environment, Universite de Pau et des Pays de l'Adour (UPPA), Anglet, France

Abstract:

Malaria has been a major public health concern in Nigeria, and most especially in rural areas where vector control efforts are either lacking or limited. Monitoring sporozoite infection rate in adult female mosquitoes is critical in evaluating malaria outbreaks. This study evaluates the sporozoite infectivity rate of female Anopheles mosquitoes in Toro Local Government Area (LGA) of Bauchi State, Nigeria, to determine malaria burden in the locality. The Pyrethrum Spray Catch (PSC) method of collection was adopted, and seven hundred and thirteen (713) mosquitoes collected from various communities within the LGA. The mosquitoes were morphologically identified using standard taxonomic keys. Categorization of the female Anopheles was based on the abdominal condition, and dissections were performed to detect sporozoites using established WHO procedures. The infectivity rate of female Anopheles mosquitoes was computed as the fraction of mosquitoes with confirmed Plasmodium sporozoites among those dissected. Out of the 713 mosquitoes, 637 were Anopheles and 76 were Culex. Among the Anopheles, 622 were female. Anopheles gambiae accounted for 70.7%, while Anopheles funestus made up 29.3%. Statistical analysis revealed no significant variation in Anopheles species distribution across the communities ($p > 0.05$). The abdominal assessment showed 29.7% unfed, 39.1% fed, 18.2% half-gravid, and 13.0% fully gravid. Sporozoite infection was recorded at an overall rate

of 28.8%, with significant variation based on mosquito species abundance, collection season, and community ($p < 0.05$). This finding/results indicates positive malaria transmission in the study area as well as highlights on the significance to strengthening vector control measures and surveillance systems in Toro LGA of Bauchi state, Nigeria.

Keywords:

Anopheles, Sporozoite, Malaria transmission, Toro, Bauchi State, Nigeria.