IL/OL-69

The Eco-Epidemiology of Tick-Borne Hemoparasitic Diseases Using Geographic Information Systems

Javad Rafinejad*[1].Mohammad Mehdi Sedaghat,[1] Khadijeh Shemshad,[2] Karim Kamali,[3] Zabihollah Charrahy,[4] Akbar Biglarian[5]

[1]Department of Medical Entomology and Vector Control, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran, [2] Department of Medical Entomology, Faculty of Health, Mazandaran University of Medical Sciences, Sari, Iran, [3]Department of Entomology, Science and Research Branch, Islamic Azad University, Tehran, Iran, [4]Department of Education, Jehad-e-Daneshgahi of Tehran University, Tehran, Iran, [5]Department of Biostatistics, University of Social Welfare and Rehabilitation (USWR), Tehran, Iran

Background: Tick-borne diseases are of the most important diseases in the world including Iran. This survey was conducted to understand the eco-epidemiology of tick-borne hemoparasitic diseases in Qazvin province, Iran, using Geospatial Information System (GIS).

Materials and Methods: DNA samples were extracted from livestock blood samples collected from different regions of Qazvin province. 18S rRNA-based PCR targeted Theileria/ Babesia species were done. Initial parameters for mapping the local tick-borne hemoparasitic diseases and raster files were obtained from Iran Meteorological Organization and Iranian Space Agency. Mapping of the parameters in relation to prevalence of these diseases were done. Statistical analysis was used for weighting parameters ranking and predicting spatial distribution in different climatic zones.

Results: Vapor pressure, precipitation, and altitude are of several environmental factors correlated with tick abundances. Based on the generated maps and the results of this survey, some predicting results could be used for predicting tick-borne diseases and their control. 9.7% of ruminant blood samples (N=16) were infected with protozoa pathogens from the genera Theileria and all of the specimens were negative regarding to Babesia genera.

Conclusion: Results showed that prediction of a very high prevalence of Theileria/Babesia species and mapping endangered area is possible in different parts of Iran. Based on the environmental conditions, key factors exist for host-seeking and range expansion of tick

Key Words: Eco-Epidemiology .Tick-Borne. Hemoparasitic Diseases .GIS