

## OPINION

by Prof. Dr. Daniela Kirilova Pilarska, Institute of Biodiversity and Ecosystem Research at BAS

**Regarding the dissertation entitled "Characteristics of imports and evaluation of the possibility of malaria recovery in Bulgaria in the face of global climate change" for the acquisition of educational and scientific degree**

**"Doctor" by Dr. Iskren Tzvetkov Kaftandjiev**, PhD student in independent training in the scientific specialty "Parasitology and helminthology" at the National Center for Infectious and Parasitic Diseases

The dissertation presented is devoted to the risk of malaria transmission in our country, which determines its relevance, especially in the conditions of climate change and the presence of an increased flow of immigrants from Asia and Africa, areas endemic to malaria. The doctoral student addresses this problem against the background of climate change, which can increase the susceptibility of the country and, accordingly, the risk of local transmission of this dangerous parasitosis.

The purpose of the doctoral dissertation is clearly formulated and achieved through the successful completion of several basic tasks. Using up-to-date and adequate statistical methods and mathematical models, the doctoral student examines 175 patients with imported malaria who were registered for the period 2000 - 2015 in 17 of the 28 districts of the country to perform a modern epidemiological characteristic of imported malaria and to identify the root causes of complications and death in the course of tropical malaria. Through a comparative analysis of the average monthly and annual temperatures, some characteristics of the potential malaria season in the country were investigated. A spatial analysis of imported malaria cases has identified the areas of the country with the highest vulnerability and, from there, with a higher risk of resumption of local malaria transmission.

The results obtained are convincing and the resulting conclusions are clearly and precisely stated.

I accept the 10 contributions formulated by Dr. Kaftandjiev, of which 3 are scientific with original character and 7 are scientific-applied. They can be summarized as follows:

- For first time, a successful method of spatial epidemiological analysis has been applied and successfully tested to assess the risk of malaria and to identify the riskiest areas in the country.
- By applying mathematical models, a prognostic algorithm for the potential number of individuals affected and the development of the epidemic process in the event of malaria recovery in Bulgaria have been developed. These high-probability mathematical models can predict the possible damage that malaria can cause in cases of sending contingents to endemic malaria regions.
- The information on cases of imported malaria in Bulgaria, the vulnerability of our territory to this disease has been updated and the riskiest contingent for the occurrence

of malaria cases in the country has been defined. This makes it possible to develop effective monitoring and surveillance measures for malaria transmission in Bulgaria.

The submitted abstract is designed according to the requirements and corresponds to the results and conclusions presented in the dissertation.

The results of the dissertation have been published in 5 scientific papers, 2 of which are in Impact Factors, included in the Web of Science database, and one in the Scopus database. The doctoral candidate has 5 participations in conferences in Bulgaria and abroad.

**Conclusion:** In terms of volume, content and scientific contributions, the dissertation is fully compliant with the requirements of the Academic Staff Development Act of the Republic of Bulgaria. The PhD student has gained considerable research experience in the field of parasitology. The results obtained are of significant theoretical and practical importance and can be applied to the successful implementation of epidemiological surveillance and control of malaria imported into the country.

All this gives me reason to support the awarding of the Doctorate degree to Dr. Iskren Tzvetkov Kaftandjiev.

12/23/2019

Drafted the opinion:



Prof. Dr. Daniela Kirilova Pilarska