

Sea corals helped scientists detect tick-borne encephalitis

Scientists from the Institute of Biophysics of the Russian Academy of Sciences and Siberian Federal University, together with the colleagues from Novosibirsk developed a rapid test method for detection of tick-borne encephalitis. Krasnoyarsk scientists have created a biosensor based on the luminescent protein of the soft coral *Renilla muelleri* to detect the virus effectively.

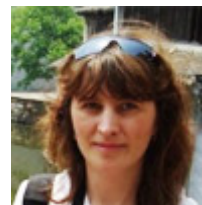


According to **Lyudmila Frank**, Professor of the Basic Chair of Biotechnology of SibFU, emergency prevention of the tick-borne encephalitis includes administration of the medicine which is extracted from the donor blood serum. The process always goes along with the biological risk and, in addition, there may be cases of medicine shortage during the epidemiological season: *"On average, only about 5 % of ticks are carriers of tick-borne encephalitis virus. Therefore, a rapid, highly sensitive detection of the virus is necessary in order to avoid needless use of the medicine"*.



To determine the contamination hybrid protein is added to the extract from a tick, which, on the one hand, can specifically bind to tick-borne encephalitis virus, and on the other hand, is able to luminesce. If there is the virus, the biosensor gives a signal in the form of a bright flash.

Lyudmila Burakova, the researcher of the Laboratory of Photobiology of the Institute of Biophysics, explained that in the past year the new method has been tested in a laboratory environment on the ticks specially infected with encephalitis virus: *"This year, we conduct the tests of the method on a natural material. According to preliminary data, the method allows to detect the presence of the virus in ticks in an hour and a half, in contrast to the existing methods of diagnosis in which the detection of infection takes a few hours"*.



The rapid test method is unique and has no alternatives today. The simplicity, reliability and ability to detect even a small amount of the virus makes the biosensor competitive as compared to the traditional methods of the virus detection.

Note

Tick-borne encephalitis — a viral infection that affects the central and peripheral nervous system, severe complications of which may result in paralysis and death. According to the Chief Sanitary Doctor of Russia, last year the number of citizens bitten by ticks in different regions has increased by 10-20 % and amounted to 440 000 people.

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