Detection of rabies antibodies in dog sera

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Abstract

In the presented work, we compared the results of determination of rabies antibodies using three in vitro methods: rapid fluorescent focus inhibition test (RFFIT), fluorescent antibody virus neutralisation test (FAVNT) and the immunoenzymatic assay (ELISA). 196 dog sera samples were examined with FAVNT, RFFIT methods and the ELISA test. Sera with low and sufficiently high titre of antibodies had a similar result in determining by all methods. A critical level of rabies antibodies close to the required protection level (0.5 IU/cm³) was seen in sera of 18 dogs (9.18%); these were the sera obtained after primary vaccination of dogs. At this level, even small differences can cause a change in the assessment of the patient’s serum seronegativity or seropositivity. Therefore, it is important to choose the appropriate method that has sufficiently strict criteria while having a good reproducibility.

Key words: Rabies, antibodies, dog, comparison, RFFIT, FAVN, ELISA

Introduction

Prophylactic vaccination is irreplaceable and very important when it comes to the prevention of rabies in animals and humans. Detection and quantification of antibodies is used primarily for the control of the status of humoral immunity of the animal after antirabic vaccination and also for the characterization of antigens activity in rabies vaccines. Antibodies are the results of the humoral immune response of the organism to the antigens; it is a process that is driven, and influenced by many factors: amounts of antigens, way of application, and the participation of the main histocompatibility complex (MHC) genes and, especially the status of the animal (Moore and Hanlon 2010).

WHO Expert Committee on Rabies determined that the level of the antibodies of at least 0.5 IU/cm³ means the adequate protection by vaccine (Smith 1991, Meslin et al. 1996). This value of 0.5 IU antibody titre was first mentioned by the Expert Committee on Rabies in the 8th WHO Report in 1992 and is recognized throughout the world. For the detection and quantification of antibodies multiple methodologies have been developed, standardized and recommended by supranational institutions. Performance