Antibody response of dogs to ETHIORAB rabies vaccine

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Background: Rabies is 100% fatal, but it is preventable. More than 95% of human rabies cases occur in improperly treated individuals. This is partly because of modern post-exposure rabies prophylaxis is expensive and therefore not readily available in many endemic regions. Nervous tissue vaccine has been in use for more than 100 years. These vaccines have now been superseded in purity, potency, immunogenicity and safety.

Objective: The objective of this research is to evaluate the efficacy and immunogenicity of inactivated tissue culture rabies vaccine produced in Ethiopia.

Methods: Twelve experimental dogs from local breed were duly conditioned during a quarantine period and assigned to two groups randomly. Animals in group I (cases) were vaccinated subcutaneously with 1 ml of our experimental vaccine. Dogs in group II served as non-vaccinated controls. The immune response of each dog was monitored for 120 days. On the day 120 after final sampling, all dogs were challenged in the masseter muscle with a rabies street virus of canine origin. To evaluate the titer of the rabies virus, neutralizing antibodies (VNA), sera were analyzed by Fluorescent Antibody Virus Neutralization (FAVN) Test. Geometric Mean Titers (GMT) to rabies virus was determined at days 7, 15, 21, 30, 60, 90 and 120.

Results: Geometric mean titers were equal to 1.59, 1.73, 2.19, 3.58, 3.17, 3.35 and 3.56 IU/ml at days 7, 15, 21, 30, 60, 90 and 120 respectively. All dogs showed VNA titers higher than the 0.5 IU/ml mandated WHO recommended threshold. 83.3% vaccinated dogs, survived the challenge virus. In contrast, all dogs in the control (non-vaccinated group), developed rabies.

Conclusions: This study indicated cell culture-based anti-rabies vaccine manufactured at EPHI is efficacious and immunogenic. Field trials should be conducted before mass vaccination of dogs to control rabies cases.

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