

Elucidation of rabies virus pathogenesis from clinical canine brain using proteomic approach

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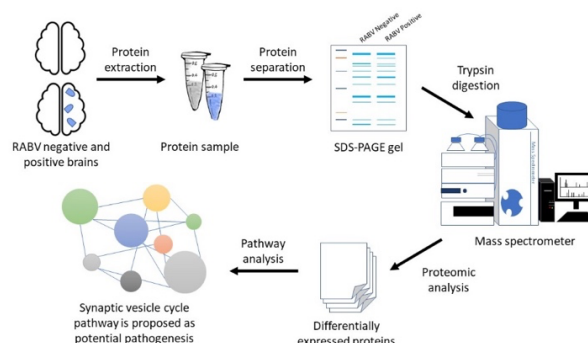
Abstract:

Rabies virus (RABV) causes lethal zoonosis, leading to 60,000 deaths every year. The significant pathology of RABV is cerebral inflammation, which could be lethal and lead to death. To our knowledge, the pathogenesis of RABV is unclear and required elucidation. Therefore, this research aimed to investigate the pathogenesis of RABV-infected brains using proteomic methods. Dog brain tissues were collected from those sent to diagnose rabies at Queen Saovabha Memorial Institute. Three samples of RABV-positive and RABV-negative samples were selected for the study. Proteins were extracted, separated by SDS-PAGE, and digested with trypsin; then digested proteins were analyzed by ESI-Q/ToF mass spectrometry. A total of 5,933 proteins were identified, of which 255 proteins were differentially expressed. The pathway analysis highlighted the significant alteration in the synaptic vesicle cycle pathway in RABV-positive samples. The synaptic vesicle cycle is the vital pathway for the regulation of nerve signaling within the brain. Therefore, the interference of this pathway might affect brain function, which would lead to clinical symptoms of rabies. In conclusion, the results from the current study suggested that the synaptic vesicle cycle pathway might be involved in RABV pathogenesis. A better understanding is required to identify a treatment target for rabies in the future.

Graphical abstract:



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Keywords: Rabies, Proteomics, Synaptic vesicle cycle

Funding: This work was supported by Chulabhorn Royal Academy, grant number E2563/077.

Acknowledgments: We express our gratitude to Department of Molecular Tropical Medicine and Genetics and Central Equipment Unit, Faculty of Tropical Medicine, Mahidol University for facility and equipment support.