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Molecular Detection of Viruses Causing Hemorrhagic Fevers in Rodents in the South-West of Korea

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Abstract : Background: Many pathogens causing hemorrhagic fevers of medical and veterinary importance have been identified and isolated from rodents in the Republic of Korea (ROK). Objective: We investigated the prevalence of emerging viruses causing hemorrhagic fevers, such as hemorrhagic fever with renal syndrome (HFRS), severe fever with thrombocytopenia syndrome (SFTS) and flaviviruses, from wild rodents. Methods: Striped field mice, Apodemus agrarius, (n=39) were captured during 2014-2015 in the south-west of ROK. Using molecular methods, lung samples were evaluated for SFTS virus, HFRS virus and flavivirus, and seropositivity was evaluated in the blood. Results: A high positive rate of Hantavirus (46.2%) was detected in A.agrarius lungs by reverse transcription-nested polymerase chain reaction (RT-N-PCR). The monthly prevalence of HFRS virus was 16.7% in October, 86.7% in November and 25% in August of the following year ($p < 0.001$). Moreover, 17.9% of blood samples were serologically positive for Hantavirus antibodies. The most prevalent strain in A. agrarius was Hantaan virus. All samples were positive for neither SFTS nor flavivirus. Conclusion: Hantan virus was detected in 86.7% of A. agrarius in November (autumn), and thus, virus shedding from A. agrarius can increase the risk of humans contracting HFRS. These findings may help to predict and prevent disease outbreaks in ROK.

Keywords : hemorrhagic fever virus, molecular diagnostic technique, rodents, Korea
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