

## Evidence for the Absence of La Crosse Virus, Rift Valley Fever Virus, and Bunyamwera Virus in Korean Domestic Pigs

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Until today, several viruses of family *Bunyaviridae* such as severe fever thrombocytopenia syndrome virus (SFTSV), Rift Valley fever virus (RVFV), Sandfly fever Naples virus (SFNV), La Crosse virus (LACV), and Bunyamwera virus (BUNV) are known as zoonotic pathogens (1-3). An outbreak of RVFV (*Phlebovirus*) in developed countries including U.S and Europe, could force a curtailing of livestock movement to prevent RVFV spread, causing massive loss because of high rates mortality and abortion in pregnant sheep, cattle, and goat (4). Reported cases due to LACV and BUNV, members of the genus *Orthobunyavirus*, have been increased in North America, South America, Africa, and Europe (1, 3). LACV, RVFV, and BUNV are transmitted by mosquitoes (*Culex spp.*, *Aedes spp.*, etc) which are known to prevail in Korea (5).

This study aimed to investigate the presence of LACV, RVFV, and BUNV in pigs in Korea, on the basis of regional and individual farm surveillance. From January to November, 2013, a total of 586 pig bloods were randomly collected from 45 commercial swine farms in 9 provinces (Supplementary Figure).

Total RNA of these samples was extracted using Trizol LS (Invitrogen, USA) following the

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manufacturer's instructions. The RNA was then converted into cDNA with the use of random hexamers and commercial M-MLV reverse transcriptase kit (Invitrogen, USA) following the manufacturer's protocol. PCR reactions were performed with pathogen-specific primers using Maxime PCR PreMix kit (iNtRON, Korea). The specific primers (given in 5' to 3' direction) for each of LACV, RVFV, and BUNV are given in Supplementary Table. Each of viruses (LACV, RVFV, and BUNV) positive controls were used by the Bioneer, Corporation, Korea (AccuGeneBlock synthetically service).

The PCR profile was 95 °C for 5 min; 38 cycles of 95°C for 20 s, 56 °C for 30 s, 72 °C for 40 s; and final extension at 72 °C for 10 min. Of the total 586 samples, none were found to be positive with LACV, RVFV, and BUNV. Also, no positive samples were detected according to seasons of the year (Table).

In conclusion, this preliminary survey found no evidence for the presence of LACV, RVFV, and BUNV in pigs, in Korea. In the next phase, attempts will be done for serological survey against the above mentioned viruses. In addition, because LACV, RVFV, and BUNV are arthropod-borne viruses, it is important to examine mosquitoes for the presence of the viruses.

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### **Author Disclosure Statement**

No competing financial interests exist.

### **Conflict of Interest**

The authors declare that there is no conflict of interest

### **Supplementary Data:**

Supplementary table1

Supplementary figures: Locations of investigated swine farms for LACV, RVFV, and BUNV.

**Table.** RT-PCR screening results according to the age and month

Age*	No. of positive (positive rate %)			Month	No. of positive (positive rate %)		
	LACV	RVFV	BUNV		LACV	RVFV	BUNV
Gilt (n=69)	0	0	0	January (n=42)	0	0	0
Sow (n=106)	0	0	0	February (n=43)	0	0	0
Suckling (n=96)	0	0	0	March (n=40)	0	0	0
Weaned (n=90)	0	0	0	April (n=40)	0	0	0
Grower (n=105)	0	0	0	May (n=64)	0	0	0
Finisher (n=120)	0	0	0	June (n=72)	0	0	0
				July (n=79)	0	0	0
				August (n=69)	0	0	0
				September (n=49)	0	0	0
				October (n=51)	0	0	0
				November (n=37)	0	0	0
<b>Grand total (n=586)</b>	0	0	0	<b>Grand total (n=586)</b>	0	0	0

\*Samples were sorted into six groups: female (gilt and sow), suckling (<30 days), weaned (30-60 days), grower (60-90 days); and finisher (≥90 days)

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