Current Status and Challenge of Pesudorabies Virus Infection in China

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Abstract

Pesudorabies (PR), also called Aujeszky's disease, is a highly infectious disaster caused by Pseudorabies virus (PRV). Without specific host tropism, PRV can therefore infect a wide variety of mammals, including pig, sheep, cattle, etc., causing severe neurological symptoms and acute death. This pathogen was first reported in China in 1950s, while outbreaks of variant PRV strains have been documented in partial regions since 2011, leading significant economic losses to swine industry in this country. Although Chinese scientists have made lots of efforts in the design of diagnostic approaches and the development of vaccines during the past years, PRV remains a vital pathogen widely spread in China and poses huge threats to the country's pig industry. Especially, its potential threat to human has also been described recently. In this review we provide a summary of current understanding of PRV by mainly focusing on the prevalence of PR in China, cases of human infection by PRV, the existing diagnosis methods for the detection and the available vaccines against its infection. Additionally, promising agents including traditional Chinese herbal medicines and novel inhibitors that may be employed to treat this viral infection, are also discussed.

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Table 1: Factors associated with pooled sero-prevalence of PRV infection among pigs in China

Factors		Study numbers	Tested numbers	Positive numbers	Positive rate (%) (95 CI)	P value
Region	Northeastern China	7	5703	1284	22.5 (21.4-23.6)	*P*<0.001
	Northern China	5	10740	4257	39.6 (38.7-40.6)	*P*<0.001
	Northwestern China	8	12738	3125	24.5 (23.8-25.3)	*P*<0.001
	Central and Southern China	27	83202	24744	29.7 (29.4-30.1)	*P*<0.001
	Eastern China	38	96339	34534	35.8 (35.6-36.2)	*P*<0.001
	Southwestern China	22	43800	7211	16.5 (35.4-36.3)	Reference
Feeding pattern	Free range farm	8	5396	2272	42.1 (40.8-43.4)	*P*<0.001
	Small farm	9	12218	4194	34.3 (33.5-35.2)	*P*<0.001
	Middle pig farm	9	16215	5771	35.6 (33.6-35.1)	*P*<0.001
	Intensive pig farm	10	18621	3558	19.1 (18.6-19.7)	*P*<0.001
	Breeding pig farm	1	414	19	4.2 (2.2-6.1)	Reference
Season	Spring	6	5026	1176	23.4 (22.2-24.6)	*P*<0.05
	Summer	6	7060	2102	29.8 (28.7-30.8)	P<0.001
	Autumn	6	8262	1763	21.3 (20.5-22.2)	Reference
	Winter	6	8142	2304	28.3 (27.3-29.3)	P<0.001
Developmental stage	Piglets	12	4353	1102	25.3 (24.0-26.6)	*P*<0.001
	Nursery pigs	13	5965	2159	36.1 (34.9-37.4)	*P*<0.001
	Growing-Finishing Pigs	11	4539	1151	25.4 (24.1-26.6)	*P*<0.001
	Gilts	10	4546	1507	33.2 (31.8-34.5)	*P*<0.001
	Boars	10	2258	447	19.8 (18.2-21.4)	Reference
	Reproductive Pigs	15	15153	5049	33.3 (32.6-34.1)	*P*<0.001

Note: The statistics of different groups were analyzed using the SPSS 22.0 (IBM Corp), A p value < 0.05 was considered as statistically significant. Additionally, odd