

Virological surveillance for swine influenza in Europe



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Introduction

Swine influenza (SI) is an important cause of acute respiratory disease in pigs. Three genetically and antigenically distinct influenza virus subtypes – H1N1, H3N2 and H1N2 – have been co-circulating in the European swine population since the 1990s (1). Unlike human and avian influenza viruses, surveillance of SI viruses (SIVs) has long been neglected. As a consequence, our knowledge on the antigenic and genetic evolution of swine “flu” in Europe is limited. This poster summarizes the results of the virological surveillance and preliminary characterization of SIVs, conducted in 5 European countries in 2006 and 2007. All participating labs are members of the second European Surveillance Network for Influenza in Pigs (ESNIP 2) (2).

Materials and Methods

- 5 labs from Belgium, Great Britain, Italy, France and Spain participated in the Virological surveillance
- Nasal swabs and/or lung tissue were collected from acute respiratory disease outbreaks in the field
- Virus isolation in embryonated chicken eggs and/or cell cultures
- Subtyping of both the haemagglutinin (HA) and the neuraminidase (NA) by haemagglutination inhibition (HI), neuraminidase inhibition (NI) test and/or multiplex RT-PCR

Labs, region under surveillance and method of HA and NA subtyping

Lab	Area	HA subtyping	NA subtyping
UGent	Flanders	HI test*	NI test*
VLA	Great Britain	HI test	NI test
IZSLER	Lombardia & Emilia Romagna	HI test and/or RT-PCR	RT-PCR
AFSSA	Brittany	HI test and/or RT-PCR	RT-PCR
HIPRA S.A.	Spain	HI test and/or RT-PCR	RT-PCR

* HI and NI tests performed with hyperimmune sera against Sw/Finistère/82 (H1N1) Sw/Gent/84 (H3N2) and Sw/Scot/94 (H1N2)

Overview of SIV isolates 2006-07

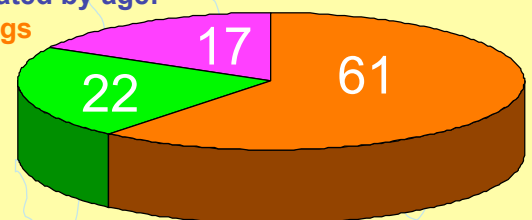
Partner	Year	No of isolates	H1N1	H3N2	H1N2
UGent	2006	4	1	3	0
	2007	8	2	4	2
VLA	2006	7	6	0	1
	2007	4	4	0	0
IZSLER	2006	16	8	4	4
	2007	10	3	3	4
AFSSA	2006	22	13	0	9
	2007	25	13	0	12
HIPRA	2006	10	3	3	4
	2007	9	1	5	3
Total		115	54	22	39

Nine SIVs isolated from vaccinated animals: 5 H1N2, 2 H1N1 and 2 H3N2 (SIV vaccines in Europe contain one H1N1 and one H3N2 strain)

Results

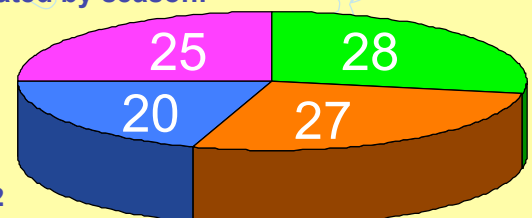
Percent of SIVs isolated by age:

- 3 to 6 months-old pigs
- adult pigs
- < 3 months-old pigs



Percent of SIVs isolated by season:

- Winter
- Spring
- Summer
- Fall



Conclusions

- All isolates could be easily identified with hyperimmune sera against reference strains
- Novel H1N1 and H1N2 reassortants (3) are relatively unimportant in the countries examined; only one H1N1 reassortant virus was isolated in France in 2006.
- While all 3 SIV subtypes were found in Belgium, Italy and Spain, no H3N2 SIVs were isolated in Great Britain or Brittany (France)
- Results of the virological surveillance are confirmed by a serological surveillance conducted in parallel by ESNIP partners

References

(1) Olsen C. et al. 2005 Diseases of swine, 9th edition (2) <http://www.esnip.ugent.be> (3) Marozin et al. 2002 J. Gen. Virology

