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Characterisation of *Actinobacillus pleuropneumoniae* strains isolated in Hungary

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1

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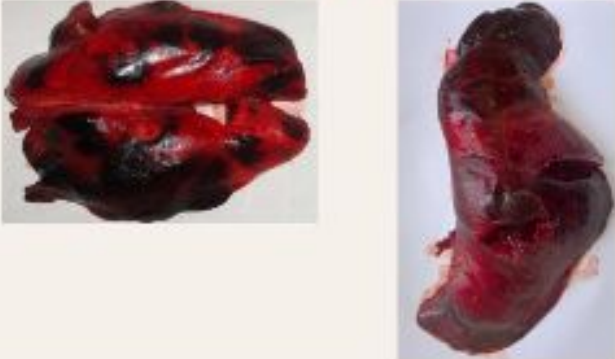
Pleuropneumonia caused by *A. pleuropneumoniae*

- Only pigs are susceptible
- Clinical signs generally above 6-8 weeks of age
- Predisposing factors (infective and non-infective)
- Fast spread within a herd
- High economic impact
- Clinical forms
 - Acute haemorrhagic-necrotic pleuropneumonia
 - Chronic pneumonia
- Prevention: vaccination

2

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Pleuropneumonia caused by *A. pleuropneumoniae*



3

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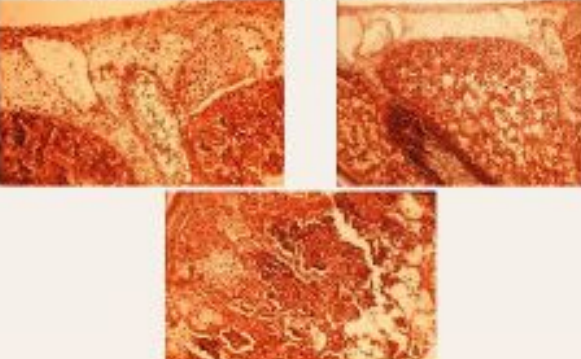
Pleuropneumonia caused by *A. pleuropneumoniae*



4

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Pleuropneumonia caused by *A. pleuropneumoniae*



5

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A. pleuropneumoniae

- Two biotypes
 - Biotype 1: NAD is needed
 - Biotype 2: NAD is not needed
- Serotypes (capsule)
 - 19 serotypes
 - IHA, coagglutination test, slide agglutination test, PCR
 - Cross reactions
 - Great variability
- Virulence variants



6

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Virulence factors of *A. pleuropneumoniae*

- Toxins
 - ApxI: highly haemolytic and toxic
 - Serotypes: 1, 5, 9, 10, 11, 14, 16
 - ApxII: weakly haemolytic, moderate toxicity
 - Serotypes: all except 10 and 14
 - ApxIII: non-haemolytic, highly toxic
 - Serotypes: 2, 3, 4, 6, 8, 15
 - ApxIV: produced only in the host
 - Serotypes: all
- Fimbria
- Outer membrane proteins
- Enzymes
 - Hyaluronidase
- Biofilm production

7

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Case I.

A. pleuropneumoniae serotype 16

- Five *A. pleuropneumoniae* strains isolated from postmortem cases could not be serotyped
- 16S rRNA gene confirmed the identification of *A. pleuropneumoniae*
- Hyperimmune serum was produced against them in rabbits
- The hyperimmune serum reacted with the five field strains but not the type strains of *A. pleuropneumoniae*
- ApxI, ApxII and ApxIV toxins were produced
- New serotype: serotype 16
- Confirmation: sequencing the capsule gene

8

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Case II.

Actinobacillus pleuropneumoniae in suckling piglets

- Farrow-finishing herd, 3000 pigs
- Sows were introduced from another unit of the company
- Local quarantine
- *A. pleuropneumoniae* serotype 16 was detected earlier
- The animals were not vaccinated.
- Clinical signs, death in 28-30-day-old piglets
- Haemorrhagic necrotic pleuropneumonia
- *A. pleuropneumoniae* serotype 11 was isolated



9

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Case III.

Carriage of *A. pleuropneumoniae* by wild boars

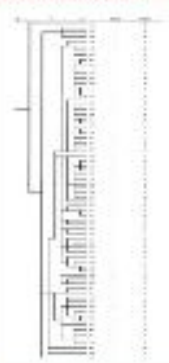
- Tonsil samples were collected from 68 hunted wild boars
- Gene of ApxIV toxin was detected with species specific PCR
- Samples were inoculated on a selective agar
- *A. pleuropneumoniae* was detected in 10 wild boars with PCR (14.7%)
- One *A. pleuropneumoniae* serotype 12 strain was isolated
- Antibiotic resistance pattern was similar to that of field strains

10

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Carbon source utilisation of *A. pleuropneumoniae*

- Biolog system
- 68 isolates from pathological cases
- Biotype 1: 41 strains
- Biotype 2: 27 strains
- 6 reference strains
- 20 carbon sources are utilised: 100%
- 13 carbon sources are utilised: 75%
- 37 carbon sources are utilised: 6%
- 25 carbon sources are utilised: 1-74%
- No correlation with biotype
- No correlation with serotype



11

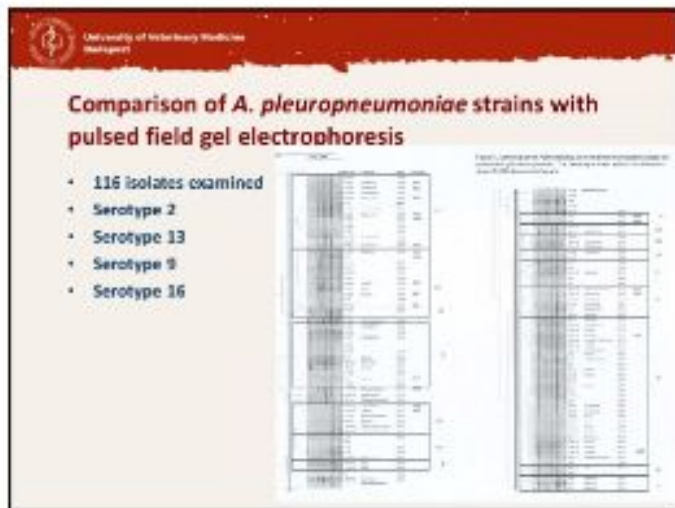
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Serotypes of *A. pleuropneumoniae*

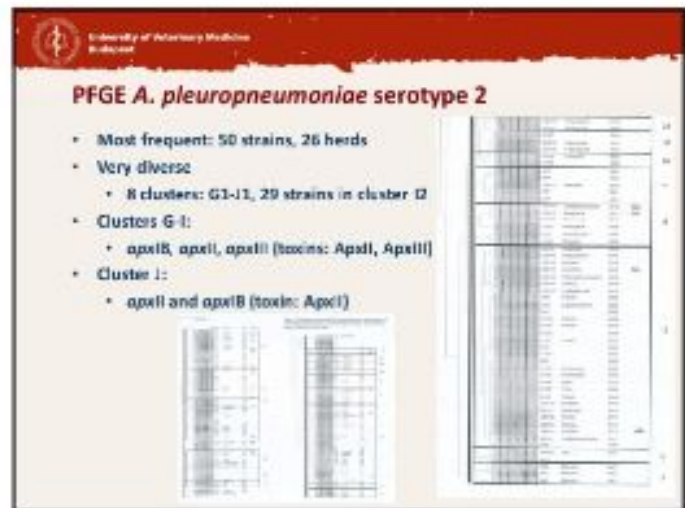
- 634 lung samples
- 70 swine herds
- 255 isolates
- Indirect haemagglutination test
- 91 strains included

Serotypes	Strains	%
2	36	39.5
5	1	1.1
8	8	8.8
9	5	5.5
11	3	3.3
12	3	3.3
13	14	15.4
14	1	1.1
16	8	8.8
NT	12	13.2
Total	91	100

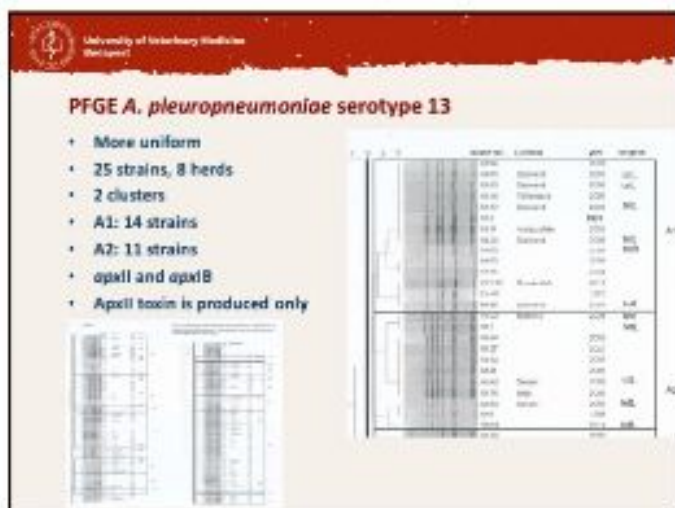
12



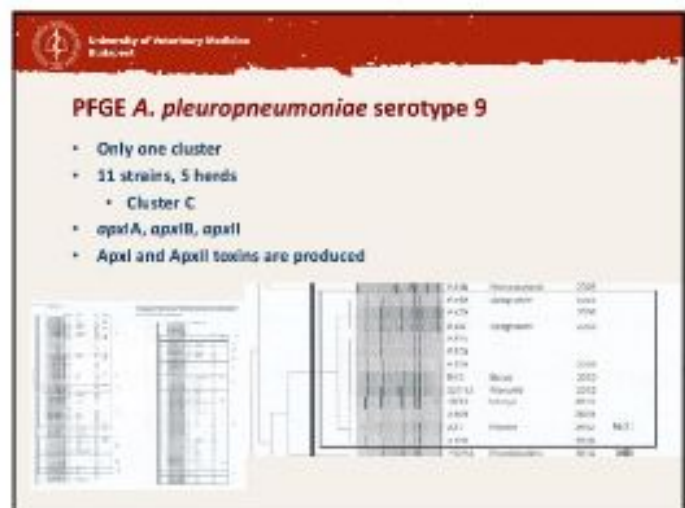
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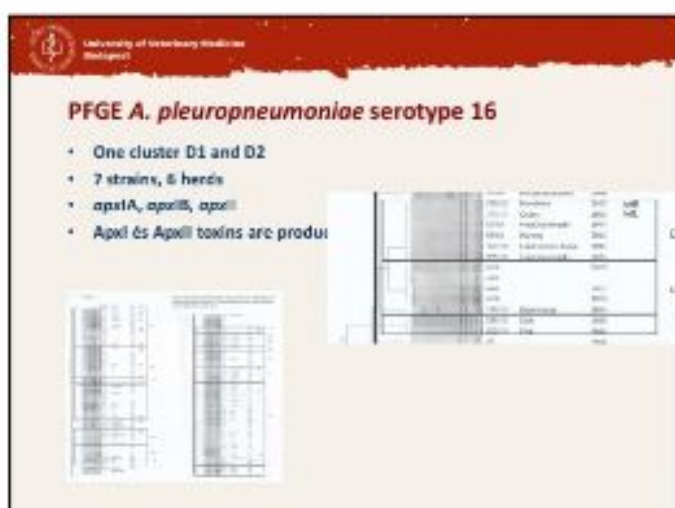
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15



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17



18

