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Incidence and antibiotic susceptibility of bovine respiratory disease pathogens isolated from the lungs of veal calves with pneumonia in Switzerland



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EAAP Annual meeting 2009, Barcelona, 26.08.09


Introduction

EAAP 2009, session 5, abstract nr 4577

- Bovine respiratory disease = fourth cause of antibiotic use
- Bovine respiratory disease = economic losses
- High incidence at arrival of veal calves in fattening units
- Pro- and metaphylactic treatment with antibiotics

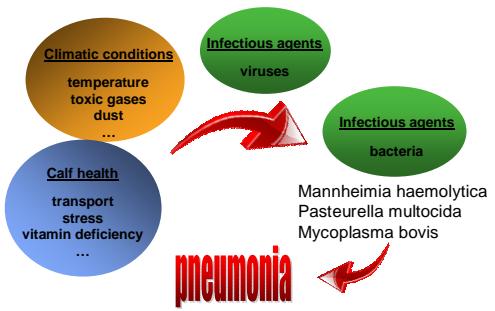


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Introduction

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Bovine respiratory disease:



pneumonia
Mannheimia haemolytica
Pasteurella multocida
Mycoplasma bovis

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Main objective of the study

- To investigate the incidence and antibiotic susceptibility of the major bovine respiratory bacterial pathogens
- Evaluation of different pro-/metaphylactic strategies at the entry of veal calves in the fattening unit



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Materials and methods

60 Holstein bull calves from 20 dairy farms



group CON
no prophylactic treatment
n = 19



group DRAX
prophylactic treat.
with Draxxin®
n = 20



group CAS
prophylactic treat.
with CAS 45K®
n = 20



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Materials and methods

- Evaluation of health status with score system for respiratory traits
- Pneumonia diagnosed by presence of fever, cough, respiratory sounds, dyspnea, reduced feed intake,...



- Transtracheal lavage on day of diagnosis of first episode of pneumonia
- Treatment of pneumonia with antibiotics (Oxytetracyclin, Florfenicol, or Danofloxacin)

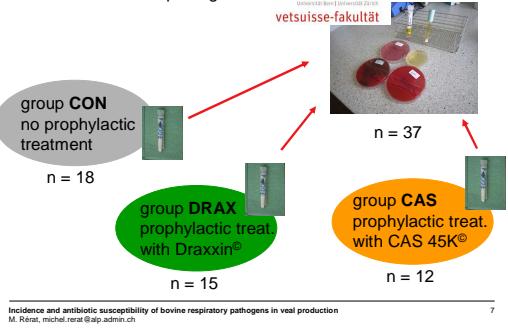
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Materials and methods

Isolation of bacterial pathogens



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Results and Discussion

Distribution of isolated pathogens:

Group		CON	DRAX	CAS	Total
Pasteurella multocida	multocida	7	6	7	20
	spp.	2	0	0	2
Mannheimia varigena	varigena	11	1	2	14
	haemolytica	1	1	2	4
Histophilus somni		0	2	0	2
Acinetobacter iwoffi		0	1	0	1
Arcanobacter pyogenes		2	1	0	3
Streptococcus bovis		2	1	1	4
	suis	1	1	2	4
	spp.	2	1	5	8
Mycoplasma bovis	bovis	4	12	0	16
	bovirhinis	7	2	1	10
	arginini	1	4	0	5
	sp.	1	1	0	2
Contaminated		1	2	5	8
No bacterial growth		1	2	0	3

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Results and Discussion

Distribution of sensitive (S), intermediate (I) and resistant (R) *Pasteurellaceae* isolates:

Pathogen	Pasteurella multocida	Mannheimia varigena
Nr of isolates	20	13
Antibiotic susceptibility	S I + R	S I + R
Penicillin, Ampicillin	18 (2)	12 (1)
Gentamicin	20 (0)	13 (0)
Chlor-, Oxytetracycline	18 (2)	11 (2)
Tylosin	3 (17)	3 (10)
Tilmicosin	8 (12)	12 (1)
Tulathromycin	20 (0)	12 (1)
Florfenicol	20 (0)	13 (0)
Enro-, Danofloxacin	20 (0)	12 (1)
Thrimethoprim/Sulfonamid	13 (7)	12 (1)

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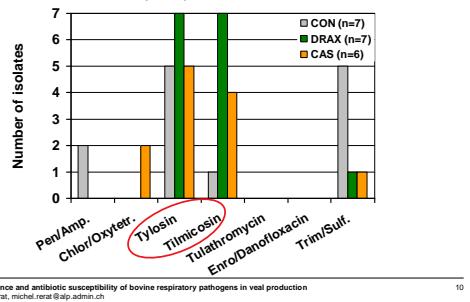
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Results and Discussion

Distribution of intermediate and resistant *Pasteurellaceae* isolates in the different groups:

Pasteurella multocida (n=20)



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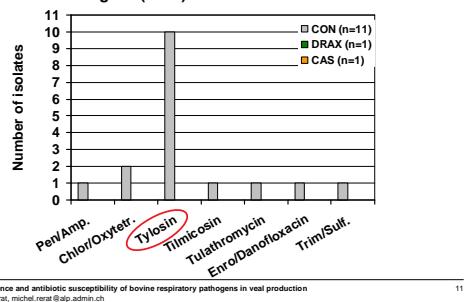
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Results and Discussion

Distribution of intermediate and resistant *Pasteurellaceae* isolates in the different groups:

Mannheimia varigena (n=13)



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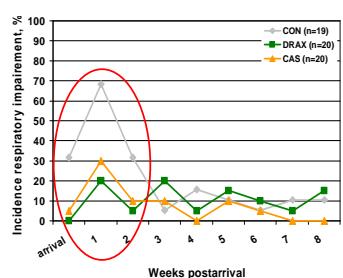
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Results and Discussion

Health Status:



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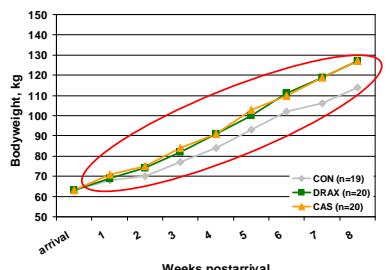
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Results and Discussion

Growth Performance:



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Conclusions

- High prevalence of Mannheimia varigena
 - High incidence of intermediate and resistant isolates to tylosin and tilimicosin
 - Tulathromycin not appropriate for treatment of Mycoplasma bovis
- Macrolide antibiotics not appropriate for pneumonia treatment



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