



Development of a bronchoalveolar lavage sampling method for the diagnosis of respiratory problems in goat kids

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Introduction

- ▶ Increasing number of goats in Belgium
 - ▶ Number of farms
 - ▶ Number of goats per farm

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- Hobby → professional goat farmers
 - Dairy goats





Introduction

- Increasing number of goats in Belgium
 - Number of farms
 - Number of goats per farm
- Hobby → professional goat farmers
 - Dairy goats
- Professional goat farmers
 - Bulk production → milk processing factory
 - On farm milk processing → cheese, yoghurt

Introduction

- Professional goat farms
 - “green” image
 - Good animal welfare
 - Few drugs used



Introduction

- Professional goat farms
 - “green” image
 - Good animal welfare
 - Few drugs used
 - Adult goats : few problems
 - Milking 500 – 5000 dairy goats



Introduction

- ▶ Professional goat farms
 - ▶ “green” image
 - ▶ Good animal welfare
 - ▶ Few drugs used
 - ▶ Adult goats : few problems
 - ▶ Milking 100 – 5000 dairy goats
 - ▶ Rearing goat kids
 - ▶ More problems
 - ▶ Knowledge
 - ▶ Care
 - ▶ Dedication



Introduction

- Rearing goat kids
 - ≤ 2 weeks : diarrhea
 - ≥ 2 months : respiratory problems





Introduction

- ▶ Rearing goat kids
 - ▶ ≤ 2 weeks : diarrhea
 - ▶ ≥ 2 months : respiratory problems
- ▶ Respiratory problems:
 - ▶ Economical losses: growth reduction, deaths \uparrow , drugs \uparrow
 - ▶ Increased use of antibiotics => risk for antibiotal resistance

Sampling methods

- Nasal swab

- Easy

- More polybacterial cultures

- Always Pasteurellaceae

- BAL

- More difficult

- Mostly pure cultures

- Pathogen agents

- *Histophilus somnus*



Aim of the study

- ▶ Development of a bronchoalveolar lavage (BAL) technique for sampling lower airways in goat kids
 - ▶ Easy to perform
 - ▶ Minimal impact on animal welfare
 - ▶ Reliable technique



Experiment

- ▶ Technique 1

- ▶ Non-endoscopic BAL technique
- ▶ ≈Calves
- ▶ Non-sedated

- ▶ Technique 2

- ▶ Laryngoscopic guided BAL technique
- ▶ Sedated (0,2 mg/kg xylazine)

Experiment

► Technique 1

- Non-endoscopic BAL technique
- ≈Calves
- Non-sedated

- Head: over-stretched position
- Catheter
- Nose
- Blind introduction
- Wedge position

► Technique 2

- Laryngoscopic guided BAL technique
- Sedated (0,2 mg/kg xylazine)

- Catheter
- Laryngoscopic guided
- Through mouth
- Over epiglottis in trachea
- Wedge position

Experiment

- ▶ Technique 1
 - ▶ Non-endoscopic BAL technique
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- ▶ Technique 2
 - ▶ Laryngoscopic guided BAL technique
 - ▶ Sedated (0,2 mg/kg xylazine)



Results

► Technique 1

- Non-endoscopic BAL technique
- ≈Calves
- Non-sedated

► BAL sampling

- 3/15 = 20%
- Struggling kids

► Technique 2

- Laryngoscopic guided BAL technique
- Sedated (0,2 mg/kg xylazine)

► BAL sampling

- 125/134 = 93% (9 farms)
 - 19 : 1-2 weeks old
 - 115 : 2-3 months old
- 10 – 15 animals per hour
- 9 failures: no or insufficient BAL fluid recovered





Conclusion

- ▶ Laryngoscopic BAL-technique
 - ▶ Sedated kids
 - ▶ 2 persons

- ▶ High success rate ($\geq 90\%$)
- ▶ Reliable technique
- ▶ 10 – 15 samples per hour
- ▶ Different ages of kids
- ▶ Well tolerated



Future perspectives

- ▶ Technique ready to be used on large scale
- ▶ Aid in respiratory diseases :
 - ▶ Better diagnosis
 - ▶ Targeted therapy
- ▶ Isolation of pathogen agent
- ▶ Control of antibiotal-resistance
- ▶ Allow developmet of farm specific autovaccins

Thank you for your attention



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