**BactiBag : an opportunity to reduce antibiotics use in boar semen processing**

Sabine Camugli¹, Mickaël Eterpi¹, Lucie Gavin-Plagne¹, Andres Gonzalez¹,², Jean-Charles Gorges¹, Augustin de Vanssay¹, Eric Schmitt¹

¹IMV Technologies, L’Aigle, France
²Justus-Liebig-Universität Gießen, Giessen, Germany

**CONCEPT**

Bacterial growth control during swine semen production is a challenge for Semen Processing Centers. Raw ejaculates are processed at temperatures favorable for microbial multiplication. Prophylactic antibiotics addition to semen extender prevents undesirable bacterial growth. This use enhances the risk of selecting bacterial resistance to antibiotics. IMV-Technologies takes advantage of commonly used bacteriostatic molecules in plastics compositions to include it into the semen bag: BactiBag. This could allow inhibition of bacterial growth and prevents release of lipopolysaccharides inherent to bacterial death.

**OBJECTIVE**

To test the performances of BactiBag in field conditions, two consecutive studies were carried out. **Study 1**: to assess whether BactiBag affects semen quality and reproductive performances. **Study 2**: to study the reproductive performance of sows inseminated with semen extended with an antibiotic-free media and stored in BactiBag.

**CONTEXT**

Bacterial growth control during swine semen production is a challenge for Semen Processing Centers. Raw ejaculates are processed at temperatures favorable for microbial multiplication. Prophylactic antibiotics addition to semen extender prevents undesirable bacterial growth. This use enhances the risk of selecting bacterial resistance to antibiotics. IMV-Technologies takes advantage of commonly used bacteriostatic molecules in plastics compositions to include it into the semen bag: BactiBag. This could allow inhibition of bacterial growth and prevents release of lipopolysaccharides inherent to bacterial death.

**MATERIALS & METHODS**

**Study 1**

**Effect of BactiBag on sperm quality**

- Sperm at 17°C within 72 hours
- Diluted in NUTRIXcell+ (with Antibiotics)
- Split ejaculate into two parts
- Control : GTB bag
- BactiBag

- Bacterial count (Guava® EasyCyte™)
- Sperm total motility (IVOS II™)
- Sperm viability (Guava® EasyCyte™)

- Laboratory

**Statistics**

Statistical analyses have been performed using SAS® (SAS Institute Inc, Cary, NC, USA), version 9.1.4. For continuous variables, a Mixed Model Analysis of Variance was used. The farrowing rate was analysed using Fisher-Exact Test using a Chi-Square probability distribution. The results are presented as Least Square Means (LSM) ± standard errors and its 95% Confidence Interval (CI).

**Study 2**

**Effect of an antibiotic-free media stored in BactiBag on sperm quality**

- Sperm at 17°C within 72 hours
- Split ejaculate into two parts
- Diluted in BTS Containing Antibiotics
- Control : GTB bag
- BactiBag

- Bacterial count (Guava® EasyCyte™)
- Sperm total motility (IVOS II™)
- Sperm viability (Guava® EasyCyte™)

- Laboratory

**RESULTS**

- Field Trial Animal Insemination
- **Control**
  - Bacterial count
  - Sperm total motility
  - Sperm viability
- **BactiBag**
  - Bacterial count
  - Sperm total motility
  - Sperm viability

- **Laboratory**
  - **Control**
    - Bacterial count
    - Sperm total motility
    - Sperm viability
  - **BactiBag**
    - Bacterial count
    - Sperm total motility
    - Sperm viability

- **Control**
  - Bacterial count
  - Sperm total motility
  - Sperm viability
- **BactiBag**
  - Bacterial count
  - Sperm total motility
  - Sperm viability

**CONCLUSION**

BactiBag showed higher farrowing rate in Study 1 while higher total motility and viability rates were observed for BactiBag in Study 2. These two experiments showed that BactiBag is a suitable aid to reduce the use of antibiotics in swine animal insemination.

**REFERENCES**

- Gonzalez1,2, Jean-Charles Gorges1, Augustin de Vanssay1, Eric Schmitt1
- IMV Technologies, L’Aigle, France
- Justus-Liebig-Universität Gießen, Giessen, Germany

Contact: +33 (0)770038976  lucie.gavinplagne@imv-technologies.com

**NUTRIXcell+**

**Lab**

**NUTRIXcell+**

**BactiBag**

**GTB bag**

**BTS**

**NUTRIXcell+**

**BTS**

**Gonzalez1,2, Jean-Charles Gorges1, Augustin de Vanssay1, Eric Schmitt1**

**IMV Technologies, L’Aigle, France**

**Justus-Liebig-Universität Gießen, Giessen, Germany**

Contact: +33 (0)770038976  lucie.gavinplagne@imv-technologies.com