

Reducing antibiotic use in the pig artificial insemination sector

Summary

Pig breeding is currently carried out by means of artificial insemination. Since pig semen can be a carrier for pathological agents, it is essential for refrigerating thinners to contain antimicrobials. In this way, the growth of bacteria in semen can be controlled, thereby preventing losses both for seminal fluid production centres and for pig farms where the semen is used. However, the use of antibiotics has been increasingly restricted to prevent the development of antibiotic resistance. For the above reasons, the present project considers the possible substitution of current preservation methods with methods based on antimicrobial peptides rather than antibiotics.

Objectives

The primary aim of the present project is to develop a method for pig semen sanitation that permits extraction, conservation and subsequent artificial insemination with refrigerated semen within an antibiotic-free environment.

Specific objectives:

- To evaluate the effect of antimicrobial peptides on in vitro sperm quality.
- To validate the effectiveness of the peptides in the production of seminal doses.
- To validate the effectiveness of the peptides at insemination centres with different working environments.
- To determine the impact of the peptides on the fertilising capacity of the semen.
- To draft a working protocol for the use of antimicrobial peptides.
- To disseminate the results obtained.

Description of project activities

Step 1. Selection of antimicrobial peptides according to their impact on semen quality, their effect on in vitro sperm capacitation, and their capacity to resist pathogens.

Step 2. Validation of the effectiveness of antimicrobial peptides in vivo and the effect of seasonal changes on antimicrobial capacity.

Step 3. Validation of the effectiveness of antimicrobial peptides within different working environments.

Step 4. Evaluation of the effect of antimicrobial peptides on the fertilising capacity of semen. Seminal doses containing the selected peptides will be prepared. Subsequently, they will be used for the insemination of sows and the resulting fertility and prolificacy figures will be documented.

Step 5. Analysis of data and dissemination of results.

Expected results and practical recommendations

Through the execution of this project, we expect to produce a method for pig semen sanitation that permits extraction, conservation and subsequent artificial insemination with refrigerated semen within an antibiotic-free environment. Sanitation will be achieved through use of an antimicrobial peptide (or a combination of peptides) that has a significant impact on bacterial growth, with effects that are comparable to those of the conventional antibiotic method.

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Centre de recerca

Keyword-category

Animal husbandry and welfare

Territorial scope

Province

Barcelona

County

Bages

Project dissemination (publications, seminars, multimedia...)

Jornades de difusió, jornades de portes obertes al centres, assistència a fires i altres jornades tècniques

Project website

www.semencardona.com

Other project information

Project period

Approved budget

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End date (month-year):

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