

Implementation of working protocols to reduce the use of antibiotics in dairy cow farms

Summary

Increasing resistance to antibiotics has been confirmed by European health authorities. The use of antibiotics in animal production continues to be in the spotlight as one of the main causes of development and maintenance of such resistance. Among the different actions that can be carried out to reduce the use of antibiotics in animal production, this project will focus on implementing two of those included in the European Union recommendations: prevention of the systematic treatment of dairy cows during the dry period and development of preventive practices (specifically, in post-partum intrauterine pathologies).

Objectives

The main objective of this project is to implement working protocols in dairy farming that will allow for a reduction in the use of antibiotics on farms. Therefore, two specific objectives are set for the creation of new protocols:

- 1) Drying off of dairy cows: To create a new working protocol based on monitoring of the animals' medical history, together with a control analysis of the condition of the mammary gland prior to the drying off.
- 2) Treatment of intrauterine infections during the post-partum period: To implement preventive practices prior to labour, in order to reduce the risk of post-partum intrauterine infections. The reduction in use of antibiotics is related to a reduction in the development of antibiotic resistance. Therefore, as a secondary objective, we aim to assess the impact of the new working protocols on the reduction of antibiotic resistance in farms.

Description of project activities

Action 1: Design of a selective drying off protocol to reduce the use of antibiotics in farms.

Duration: 1 year.

Approximate number of cows: 300.

Treatments: 3 groups of animals.

- 1) Conventional protocol: Antibiotic will be administered as a preventive measure, regardless of the pre-drying-off analysis results.
- 2) Whole selective protocol: If the presence of bacteria is detected in any of the 4 quarters of the udder, all 4 quarters will be treated.
- 3) Selective protocol: If the presence of bacteria is detected in any of the 4 quarters of the udder, just the affected quarters will be treated.

Set-up:

-Gathering information from the latest 3 milk controls.

-Milk cultures of the 4 quarters in bi-plates, prior to the drying off and during the post-partum period (preservation of isolated bacteria strains).

-Count of somatic cells in the 4 quarters, prior to the drying off and during the post-partum period.

-Gathering information on the intra-mammary pathology and on milk production during the subsequent lactation.

Action 2: Design of a preventive protocol to reduce intrauterine infections during the post-partum period.

Duration: 1 year.

Cows: All the animals in the farm during this period of time.

Treatments:

- 1) No treatment will be applied 3 weeks before calving.
- 2) Two intra-vaginal infusions of a probiotic combination will be given during each of the three weeks prior to labour.

Controls:

- During days 6-10 post-partum, vaginal discharges and rectal temperature will be assessed.
- Incidence of metritis (infections >21 days post-partum) and reproductive data regarding the following insemination will be recorded.

Action 3: Assessment of the impact of the presented protocols on the reduction of antibiotic use and on the resistance to antibiotics in dairy cow farms.

Duration: 1 year.

Cows: The whole farm.

Treatments: The best working protocols from Actions 1 and 2 will be implemented for 1 year.

Controls: Isolation of Escherichia coli cultures in different farm environments at the beginning and at the end of the 1-year of the study. Completion of antibiograms to assess the resistance to antibiotics.

Expected results and practical recommendations

The expected results from the previous actions will allow:

- 1) Determination of the criteria required to choose the animals for a correct selective drying off with no risk of intra-mammary infections during the testing period
- 2) Definition of a selective drying off protocol that indicates the sampling needed to guarantee a healthy mammary gland during the subsequent lactation
- 3) Determination of whether the administration of probiotics during the pre-partum period reduces the incidence of intrauterine pathologies
- 4) Economic assessment of the costs and the reduction in antibiotic use achieved with each of the proposed strategies
- 5) Evaluation of the impact of the different initially proposed strategies on productive and reproductive parameters
- 6) Evaluation of the impact of the new protocols on the presence of antibiotic resistance in farms
- 7) Assessment of the capacity of the resistance detection method using plates to detect the presence of antibiotic resistance in a complex environment such as dairy farms
- 8) Dissemination of the most relevant results within the sector through workshops.

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Keyword-category

Territorial scope

Province

Girona

County

Pla de l'Estany

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

Project website

Other project information

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