

Effect of selective dry cow treatment in dairy cows at dry off on SCC in the following lactation

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Summary

- Using an internal teat sealant alone compared to using an internal teat sealant plus dry cow antibiotics at dry off in cows that did not exceed 200,000 cells/mL in the previous lactation resulted in higher SCC in the subsequent lactation- however the increase was not large- 20,000 cells/mL.
- Milk recording data and recording of clinical cow mastitis cases are required to identify cows that are suitable to receive internal teat sealant at dry-off.
- Using internal sealants only at dry off requires high level of hygiene- proper teat end preparation and using the correct infusion technique.

Introduction

Antibiotic resistance is becoming a major global concern in both human and animal health. Antibiotic resistance is where bacteria develop immunity to antibiotics. These bacteria can continue to grow despite antibiotic treatment. Misuse and over use of antibiotics are major contributors to the prevalence of antibiotic resistance. In an effort to reduce antibiotic resistance, the European Parliament has passed legislation to restrict antibiotic use in animal production systems. This means only animals displaying subclinical or clinical signs of disease can be treated with antibiotics. Veterinary verification will be needed to treat animals not showing symptoms of disease but are at high risk of infection. Group treatment of animals with antibiotics as a preventative measure will not be permitted. This will come into effect in the year 2022.

Whole herd treatment with dry cow antibiotic at dry off has been a standard component of mastitis control and is currently used in the majority of herds in Ireland. Selective dry cow treatment (SDCT) is an alternative method to whole herd treatment. SDCT involves only administering dry cow therapy to cows showing subclinical/clinical symptoms of mastitis or those who are at high risk of reinfection during the dry period. Low risk cows are administered an internal teat sealant on its own without dry cow antibiotic. Internal teat sealants mimic the actions of the keratin plug which is produced by dry cows, providing a physical barrier against bacterial infection after administration.

Selective dry cow therapy study

A study was carried out on three Teagasc farms (Moorepark, Clonakilty and Curtins) over three years (2015–2017) to assess the effectiveness of treating cows with teat sealant only (ITS) compared to teat sealant plus antibiotics (ITS+AB) at drying off. Cows that did not exceed 200,000 cells/mL and had no clinical mastitis during the previous lactation (LowSCC) were randomly assigned to either ITS only or ITS+ AB. Cows that exceeded 200,000 cells/mL or had clinical mastitis during the previous lactation (HighSCC) were treated ITS+AB. The entire data set included 131, 128 and 395 cows in 2015, 2016 and 2017 respectively, of which 67, 69 and 177, were LowSCC, respectively. Individual animal SCC data was available for each week of lactation over the three years of the study. Individual quarter level samples were available on four occasions over lactation (at dry-off after enrolment, first milking post-calving, 14-days after calving and mid lactation) for cultured bacteriology analysis.

Results

The LowSCC cows administered with ITS+AB had a significantly lower mean SCC and test day SCC over the entire lactation compared to the LowSCC cows administered with ITS only. The mean SCC across lactation of the ITS and ITS+AB cows were 80,900 and 60,483 cells/mL respectively. There was no significant difference in the mean or test day SCC between the LowSCC cows administered with ITS only and the HighSCC cows administered with ITS+AB. At the end of lactation the proportion of cows with SCC greater than 200,000 cells/mL was similar for both the LowSCC cows treated with ITS+AB and those treated with ITS alone (30%), whereas a greater proportion of the HighSCC group exceeded 200,000 cells/mL (45%). Lowering the threshold SCC in the previous lactation from 200,000 cells/mL, to 150,000 cells/mL and 100,000 cells/mL decreased the proportion of cows eligible for ITS only treatment from 48% to 38% and 25% respectively. However, regardless of the selection threshold imposed, LowSCC cows treated with ITS alone had a higher SCC than the LowSCC cows treated with ITS+AB.

Across the lactation, 6.0% of the quarters of the LowSCC cows treated with ITS, 2.6% of the quarters of the LowSCC cows treated with ITS+AB and 5.2% of the quarters of the HighSCC cows had bacteria present in the foremilk. The most abundant pathogen identified was *Staphylococcus aureus*.

Conclusions

Results from this study show that prophylactic antibiotic treatment at drying off does aid the reduction of SCC across the subsequent lactation. However, the SCC and infection level in the present study was not problematic. The results show that the proportion of cows which exceeded 200,000 cells/mL at the end of lactation was similar for both LowSCC cows treated with ITS alone and LowSCC cows treated with AB+TS while a higher proportion of HighSCC cows (ie those which had high SCC in the previous lactation) exceeded 200,000 cells/mL at the end of lactation. Bulk-tank SCC readings from all herds in the current study remained below 200,000 cells/mL throughout the majority of the study. This indicates that herds with good mastitis control programmes can use internal teat seal alone at drying off on cows which had SCC of less than 200,000 throughout the previous lactation with only small effects on herd SCC.

Routine milk recording and the recording of clinical mastitis cases in the previous lactation is required to correctly identify cows suitable for ITS only at dry-off (SDCT). Additionally, a high level of hygiene, proper teat end preparation and using the correct infusion technique is critical when considering SDCT as a dry-off practice.

