

Clinical Effects and Economic Benefit of an Internal Teat Sealant Administered at Dry-Off

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Introduction

Treating all quarters of all cows with a long-acting, dry-cow antibiotic at the time of dry-off is widely recommended in North America. Although a keratin plug typically seals the teat after dry-off, 23% of teats, and up to 46% on high producing cows, are still open 6 weeks later (Dingwell et al, 2003).

In North America, an internal teat sealant (ITS) has been used in conjunction with antimicrobial dry-cow therapy (ADCT) and shown to decrease new intramammary infections (IMI) by 30% and clinical mastitis (CM) in the first 60 days by 33% (Godden et al, 2003). Cook et al. reported an average economic benefit of \$5.38 US per cow in a study in 3 herds in Wisconsin.

The objective of this trial was to compare the efficacy and financial benefit of ITS+ADCT versus ADCT alone in reducing the incidence of CM in early lactation.

Methods

Cows from 12 commercial dairy farms were randomly assigned to receive either ADCT alone, or ADCT plus ITS (OrbeSeal®, Pfizer Animal Health) at dry off. Cows with dry periods of 28 to 120 days were included in the data set. Starting at calving and up to 105 DIM, cows were monitored for CM. Milk samples were aseptically collected from cases of CM, frozen and shipped to the Faculté de Médecine Vétérinaire (FMV), Université de Montréal in St-Hyacinthe, QC. Production data were collected with the herd's computerized health record (DSA LV; DS@HR, St-Hyacinthe, QC). Bacteriological culture was performed according to NMC guidelines. Data including herd, parity, treatment group, dates of calving, CM, and culling, milk culture results, and DHI information from the first 3 test days of lactation were collected.

Statistical analyses were performed using SAS 9.1.3 (SAS Institute, Cary, NC). The main outcome of interest was the incidence of CM between calving and 105 DIM. This was measured in three different ways: the probability of having a case of CM by 105 DIM, the incidence density of CM per 100 cow-days at risk and the time to the first case of CM before 105 DIM. The economic analysis was conducted using the method of Cook et al (2005).

Results and Discussion

Thirteen hundred and thirty-four cows (669 ADCT and 665 ADCT + ITS) met the inclusion criteria. Results of the key parameters of clinical mastitis are shown in Table 1.

Table 1. *First Cases of CM and Incidence Rate of CM (IRCM)/100 cow-days at risk from calving up to 105 DIM for the treatment groups ADCT+ITS and ADCT alone.*

	ADCT + ITS	ADCT
Cows	665	669
No. of 1st cases of CM before 105 days (%)	97 (15%)	125 (19%)
	(RR) = 0.78, 95% CI 0.61 to 0.99, P = 0.05	
IRCM (No. of cases/100 cow-days)	.16	.21
	Relative rate = 0.78; 95% CI 0.61 to 1.10, P = 0.06	

Accounting for the significant covariates of parity and season of calving and the random effect of herd, cows that received ADCT+ITS were 26% less likely to have a case of CM before 105 DIM. The daily probability of mastitis was 24% lower for the ADCT+ITS group. By all three measures used, cows treated with ADCT+ITS had approximately 25% lower incidence of CM than those treated with ADCT alone. This reduction is in agreement with other studies.

Cows that received ADCT+ITS were 39% less likely (P = 0.03) have a case of coliform CM, likely as result of reduced IMI in the dry period. Despite other studies finding a reduction in new IMI with Streptococci through the dry period in cows treated with an ITS, there was no difference in the risk of CM between groups in this study.

A net economic return of \$20 CDN was calculated based on the increase in saleable milk (42.9 kgs per cow @ \$71 / hL) for the group receiving both ADCT and ITS at dry off.

References

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