

Teat Coverage Persistency of Novel Teat Dip Prototypes for Dry Period Mastitis Control

A.S. Leaflet R2320

Leo Timms, associate professor of animal science

Summary and Implications

Thirty new experimental persistent barrier type teat dips and one commercial dip for dry cow mastitis control were evaluated for adherence persistency on teat ends of late gestation cows and heifers (1-2 weeks pre-calving). There was tremendous variability both within and across prototype dips, and all products failed to have a high percentage of teats protected at 3 and 5 days post dipping. Stronghold (Alfa-Laval, Inc) showed high percentages of protection (100 and 65%) at 3 and 5 days post dipping. Other issues with prototype dips included viscosity, visibility, and odor.

Introduction

Mastitis research has shown that 40-50% of intramammary infections (IMI) are contracted during the dry or non-lactating period with the greatest percentages of these occurring during the first and last two weeks of the dry period. At these times, the mammary gland is in a transitional state. Immunological factors are preoccupied or suppressed, milk is not being flushed from the gland, and increased mammary pressure distends the teat, thus allowing for easier bacterial penetration through the streak canal. Both external persistent sealant (2-5 day adherence) dips and internal teat sealants have been developed and shown to decrease IMI rates, especially environmental mastitis, in dry cows/ springing heifers during the early dry and late parturition periods when used properly. The ability to develop and apply external persistent barrier teat dip products (like a liquid bandage) that can persist for these 1 week periods could decrease IMI, thus improving animal health and performance, and product quality and safety. The specific aim of this study is to evaluate teat dip adherence times of novel prototype dry cow barrier teat dip products.

Materials and Methods

For each product, 5 dry cows or springing heifers (within 1-2 weeks pre-calving) had all 4 teats dipped with the product one time. Teats were initially predipped with the herd premilking disinfectant (.25% iodine, IBA, Inc.), dried with terry cloth towels, and then swabbed with cotton balls soaked in 70% ethanol to further reduce bacterial load. Once dry, teats were dipped with the product (whole teat immersed). Dip was allowed to dry. Teat dip persistency was visually evaluated twice daily using a 1-5 system for recording observations (5=completely on and intact; 4 = slight disruption of adherence at top of teat; 3 = dip partially

covering sides of teat but teat end fully covered; 2 = only teat end covered; and 1 = dip completely off). Animals were evaluated until dip was completely off all 4 teats. All trials and protocols were approved by the Iowa State University Committee on Animal Care.

Results

Results of adherence persistency and protection of 30 prototype and 1 commercial dry cow dip are shown in Table 1. There was tremendous variability within and across prototype dips and all failed to provide long term (3-5 day protection) compared to the commercial dip. Other issues affecting prototype dips were viscosity, visibility on teats, and offensive odors for humans (due to product solvents).

Table 1. Adherence persistency of novel dry cow dips.

<u>Teat dip</u>	<u>Persistency % > 24 hr</u>	<u>Persistency % > 72 hr</u>	<u>Persistency % > 120 hr</u>
333-81A	0	0	0
333-81B	0	0	0
333-81C	0	0	0
333-81D	20	0	0
342-67A	30	0	0
342-67B	0	0	0
342-67C	75	5	0
342-67D	85	0	0
345-17A	100	0	0
345-17B	85	5	0
345-17C	50	0	0
345-17D	25	0	0
345-17B (R)	100	15	0
345-23E	100	0	0
345-23F	50	0	0
345-29A	100	25	0
345-29B	100	60	0
345-29C	100	60	0
345-29D	100	10	0
345-30A	100	10	0
345-30B	70	0	0
345-30C	0	0	0
345-30D	50	0	0
347-39A	95	50	10
347-39B	100	50	0
347-39C	100	65	25
347-39D*	100	100	65
347-47A	100	25	0
347-47B	80	20	0
347-47C	75	0	0
347-47D	100	70	0

* Stronghold (commercial dry cow sealant dip; Alfa Laval.)