

## The use of an internal teat sealant, Orbesal®, as a preventive measure for the dry cow period

Udder infections still are one of the most important problems in milk production. This is also true for organic milk production. Many investigations showed that the dry period has a substantial influence on the mastitis situation in the following lactation. One of the measures is the application of antibiotics for dry cow therapy and prevention. However the preventive use of antibiotics is rather undesirable. Therefore internal teat sealants without antibiotics could be an alternative in preventing new intramammary infections during the dry period.

**Material and methods:** A total of 542 cows on 29 farms were included in the study. Three different procedures at drying off, i.e. dry cow prophylactic treatment with antibiotics, no dry cow prevention and Orbesal were compared. Approximately one half of the cows on each farm were treated with Orbesal and the remaining cows according to the procedure commonly used on the corresponding farm. The assignment of the cows to the different procedures was left to the farmers.

Maximally two weeks before dry off milk production advisors checked the udder health of each quarter. All quarters showing a positive California Mastitis Test (CMT) result ( $\geq +$ ) were sampled aseptically for bacterial culture.

Within three weeks after calving the cows were checked again. From all quarters with a CMT score  $\geq +$  milk samples were collected aseptically and examined for udder pathogens according to the guidelines of the NMC. Finally, data of a total of 527 cows, 2096 quarters (bacteriological analyses) and 2101 (CMT scores) could be included in the evaluation.

Comparison of CMT results before and after dry period

Treatment (nb. of cows)		CMT score after the dry period (nb. of quarters)							
		lower		equal		higher			
Orbesal (285)	all quarters	244	21.4%	741	65.1%	154	13.5%	1139	54.2%
	healthy quarters <sup>1)</sup>	7	0.8%	699	84.1%	125	15.1%	831	55.6%
	inflamed quarters <sup>2)</sup>	104	89.6%	11	9.5%	1	0.9%	116	46.2%
Antibiotics (107)	all quarters	185	43.5%	212	49.9%	28	6.6%	425	20.2%
	healthy quarters	4	1.8%	191	89.7%	18	8.5%	213	14.3%
	inflamed quarters	94	87.0%	10	9.3%	4	3.7%	108	43.0%
No treatment (135)	all quarters	76	14.1%	401	74.7%	60	11.2%	537	25.6%
	healthy quarters	0	0.0%	390	86.9%	59	13.1%	449	30.1%
	inflamed quarters	24	88.9%	3	11.1%	0	0.0%	27	10.8%
Total (527)	all quarters	505	24.0%	1354	64.5%	242	11.5%	2101	100%
	healthy quarters	11	0.8%	1280	85.7%	202	13.5%	1493	100%
	inflamed quarters	222	88.4%	24	9.6%	5	2.0%	251	100%

<sup>1)</sup> CMT score before dry off  $\leq -$

<sup>2)</sup> CMT score before dry off  $\geq +$

**Results:** Over all, in 88.5% of the cases the CMT scores were considered to be equal or lower after the dry period than before the dry period. The percentage for quarters treated with Orbesal was 86.5%, for quarters treated with antibiotics 93.4% and for quarters without any treatment 88.9%. It has to be kept in mind that significantly more inflamed quarters (CMT  $\geq ++$ ) were dried off with antibiotics (43.0% instead of 20.2%) than with Orbesal (46.2% instead of 54.2%) or without any preventive treatment (10.8% instead of 25.6%). Healthy quarters (CMT  $\leq -$ ) were assessed to be inflamed after the dry period in 15.1%, 8.5% and 13.1% of the cases with Orbesal, antibiotics or without any treatment, respectively.

Quarters dried off with Orbesal or without any treatment showed higher percentages of infections by streptococci after calving than at dry off (3.7% vs. 7.6% and 5.3% vs. 9.7%). Inversely, percentages of infections with streptococci declined from 9.5% to 3.8% in quarters dried off with antibiotics and of samples where no bacteria could be isolated increased from 18.6% to 35.8%. Percentages of infections with *Staphylococcus aureus* slightly increased in all groups with no clearly evident trend for one dry off procedure.

Cases of clinical dry cow mastitis were recorded by the farmers in three quarters of three cows treated with Orbesal, three quarters of two cows treated with antibiotics and one quarter of a cow with no treatment.

Results of microbial examinations of milk samples from quarters with CMT scores  $\geq +$

Nb of cows	Treatment at dry off											
	Orbesal 285		antibiotics 107		no treatment 135							
	at dry off	after calving	at dry off	after calving	at dry off	after calving						
Bacteria isolated												
<i>Streptococcus spp.</i>	14	3.7%	31	7.6%	21	9.5%	4	3.8%	6	5.3%	16	9.7%
<i>Staphylococcus aureus</i>	9	2.3%	17	4.1%	13	5.9%	7	6.6%	4	3.5%	8	4.8%
CNS <sup>1)</sup>	157	41.0%	156	38.0%	75	34.1%	38	35.8%	54	47.8%	57	34.5%
<i>Corynebacterium spp.</i>	113	29.5%	78	19.0%	64	29.1%	12	11.3%	27	23.9%	24	14.5%
<i>Arcanobacterium pyogenes</i>			1	0.2%								
No growth	70	18.3%	102	24.9%	41	18.6%	38	35.8%	20	17.7%	55	33.3%
Coliforms			3	0.7%	2	0.9%	2	1.9%		0.0%	1	0.6%
Other organisms <sup>2)</sup>	20	5.2%	27	6.6%	6	2.7%	6	5.7%	4	3.5%	6	3.6%
No sample			5	1.2%	2	0.9%	1	0.9%	2	1.7%	2	1.2%
Not tested	757	66.4%	725	63.6%	206	48.1%	321	75.0%	425	78.7%	373	69.1%
Total	1140	100%	1140	100%	428	100%	428	100%	540	100%	540	100%

<sup>1)</sup> *Coagulase-negative Staphylococci*    <sup>2)</sup> mixed flora, *Bacillus spp.*, *Proteus spp.*, *Pseudomonas spp*

**Conclusions:** The comparison of the three preventive measures showed that Orbesal

- offers a good protection against new infections in healthy quarters even though slightly less effective than antibiotics
- did not lead to an increased number of cases of clinical mastitis during the dry period
- can prevent milk leaking
- was, in most cases, removed easily after calving (in few individual cases, possibly in cows with very short teats, residues of Orbesal were excreted during an extended period)
- was slightly less effective than antibiotics in cases of existing udder infections by streptococci

On farms with insufficient udder health, the use of dry cow antibiotics still belongs to the recommended measures during the sanitation period. In contrast, under normal circumstances, blanket dry cow therapy cannot be recommended for Swiss dairy farms. We would suggest to practice selective of dry cow therapy, i.e. cows with an existing udder infection or at high risk (e.g. animals with damaged teats) should be dried off with antibiotics, healthy cows at medium risk (e.g. suffering from milk leaking, still at high milk production) are dried off with an internal teat sealant and healthy cows at low risk can be either dried off with an internal teat sealant or without any special preventing measure at all.

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