[1] Research Institute of organic Agriculture (FiBL); Ackerstr. CH-5070 Frick
[2] Veterinary Clinic of Reproduction; FU Berlin; Königsweg 63, D-14163 Berlin

Somatic Cell Counts of Dairy Cows following Homeopathic and Antibiotic Mastitis Treatment

P Klocke[1], S Garbe[2], J Spranger[1], CC Merck[2]

Introduction

Homeopathic Treatment of animal diseases is required in organic farming at least since EU Regulation 1804/99 according organic animal husbandary is valid for all organic producers. The hugest problem is the lack of knowledge about this difficult subject while few studies showed poor benefits considering cure rates in homeopathic mastitis treatment (MEANEY, 1994, EGAN, 1994). On the other hand, there are a lot of positiv experiences of practitioners. Aditionally, OTTO (1984) and MERCK et al. (1989) showed successfull concepts of microsubstantial therapies in field studies.

Due to the requirements of a organic biodyn farm in Brandenburg (Germany) a study was conducted to implement a standardized homeopathic prophylaxis and treatment approach which should be usefull for unexperienced practioners using 5 different combined remedies as shown in figure 1. The results showed partitially poor cure rates compared to antibiotic treatment, especially in mastitis cases caused by major pathogenes like Staph aureus and Streptococcus ssp (KLOCKE et al., 2000). In contrary to that, we observed no depression of herd udder health due to the modified therapy protocol. So it is necessary to investigate the medium term effects of homeopathic treatment to assess the development of udder health after laboratory investigations of milk considering somatic cell counts. The goal was to reduce antibiotic mastitis treatment, which requires at minimum equal therapy results of homeapathic treatment compared to antibiotic standard therapy.

Material and Methods

Involved in this study were 241 cases of clinical mastitis in one dairy herd in Brandenburg (D) only regarding first incidences in lactation from day 1 to 150 of lactation. After milk sampling (bacteriological (BI) and cell count investigation (CCI), the animals were treated either local antibiotically (Group AB; n=117) or peroral homeopthically (Group HOM; n=130) using 3 combined remedies (WELEDA AG, Arlesheim, CH) depending on clinical state at application time (peracute, acute, chronical) per two times a day until clinical cure (fig1).

Fig.1: Treatment protocol in both treatment groups

Homeopathy:
H1 beginning M., high fever (Aconitum D4, Apis D4, Jodum D6, Phytolacca D6)
H2 local acute (Belladonna c., Argentum D10, Lachesis D8, Phytolacca D6)
H3 flakes or clots only (Jodum D20, Nux vomica D6, Chelidonium c., Argentum D30)
Twice a day 10ml peroral until clinical cure

Antibiosis:
Standard Preparation: Ampicilline/Cloxacilline; possible change afterBI to Cephaperon, Penicilline
Once a day intracisternally until clinical cure (3 days at minimum)

In case of therapy failure, animals were treated with the corresponding method (Homeopathy → Antibiosis and vice versa; Group CRX; n=47) and primarly flagged as therapy failure. 14 to 21 days after clinical cure milk samples were taken for BI and CCI again. An animal was assessed as completeley cured, if there were no pathogene bacteria in control samples and the somatic cell count showed values below 100.000/ml. The definitions for therapy failure regarding the control sample were: previous therapy change, clinical mastitis recurrence, cell count above 100.000/ml in the quarter, pathogene bacteria or culling. Animals returning to milk production were tested by milk test organisation once a month and data were sampled over 5 month at minimum (Test day Cell count analysis; TDCCA). A therapy failure in this data set was difined by not acceptable cell count (>200.000/ml), previous mastitis case, therapy change, and missing test data. The definitions are found in table 1.

The analysis was conducted for all lactating animals and for subgroups to identify the factors effecting cure rates using a logistic regression model for every TDCCA. These Variables were UHC (udder health class regarding cell count at the end of previous lactation), DAY (incidence day post partum; <21 or >=21), TYPE (acute or chronic Mastitis), BAC (bacterial findings; major Pathogenes like Staph aureus and Streptococci, other MO like coliforms and CNS or unspecific regarding samples without any MO).

Tab. 1: Cure Rates (CR) and Relative Risk (RR) including Confidence interval (CI) for therapy failure after homeopathic treatment in different subgroups

Level	Definition of therapy failure				
	PMO in control sample	increased CC in control sample	mastitis recurrence before target date	therapy crossover	culling/ selling
Complete Healing	yes	yes (quarter >100.000)	yes	yes	yes
TDCC-Analysis	no	yes (animal >200.000)	yes	yes	yes
PMO=pathogene Microorganisms; CC= cell count; TDCC=test day cell count					

Results

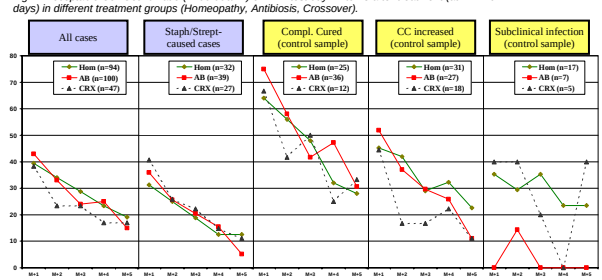
The overall complete cure rate was 25%. The homeopathic treatment group showed a cure rate of 20% compared to 31% in the antibiotic control group. Of 47 cross treated cases 12 (25,5%) showed complete healing after second treatment, so that we found a cumulative complete cure rate of 30% (Tab. 2).

Tab. 2: Cure Rates (CR) after homeopathic, antibiotic and conditional crossover-combined treatment regarding bacteriological and cell count findings at control sample date

	HOM	AB	CRX	ALL
n in investigation	124	117		241
completely cured (Cure Rate, CCR)	25 (20,2%)	36 (30,8%)		61 (25,3%)
bacterio-clinically cured (Cure Rate, BCR)	56 (45,2%)	64 (54,7%)		120
crossover Therapy (Crossover Rate; XR)	30 (24,2%)	17 (14,5%)	47 (100%)	47 (19,5%)
Complete Healing Rate crossovers (CCRX)			12 (25,5%)	
Bacteriological Healing Rate crossovers (BCRX)			30 (63,8%)	
Cumulative CCR (CCR+CCRX)				73 (30,3%)
Cumulativ BCR (BCR+BCRX)				149 (62,8%)

The analysis of acceptable Cell counts in Test data analysis (TDACC) provided a decreasing difference between treatment groups. In 5th month of lactation after Mastitis treatment the ACC Ratio (acceptable cell counts below 200.000/ml) for homeopathy in nearly all subgroups was slightly higher compared to antibiotically treated cows (see fig.2). It has to be discussed, wether there is a longterm healing effect after homeopathic treatment or the self healing effects overlapping these effects. Remarkable is the very low ratio of unconspicious animals 5 months after Mastitis of below 20%. This fact indicates very poor positive longterm effects after mastitis treatment independent of the kind of treatment (Fig. 2).

Fig. 2: Acceptable Cell Count Ratio (<200.000/ml) on milk test day #1 to #5 after treatment (at minimum 21 days) in different treatment groups (Homeopathy, Antibiosis, Crossover).



The ACC Ratios in all groups showed no significant differences. The high amount of negative slope was observed in all groups independent of cure state. Also infections with major pathogenes (Staph aureus Streptococcus) showed no ACC differences. The group of released but still subclinically infected cows was to small for an analysis, but nearly no AB treated cows had acceptable cell counts during the whole observation time.

To evaluate factors of influencing Ratios of nonaccaptable cell counts or drop outs, a logistic regression model was built up for every of the five test days including the factors THERAPY (Hom, AB, CRX), UHC (heifer, CC<200; CC>200 in End of lactation), BAC (unspecific, other MO, major pathogenes), TYPE (acute, chronic) and DAY (<21 days pp, >= 21 days pp). In none of the five models the therapy had a significant effect on ACC-Ratio. Only the Udder health class (UHC) was part of all 5 fitting models with Odds ratios between 2.1 and 4.4 for the UHC 1 Group (<200.000 CCEL) and 8.1 to 18.0 for the UHC 2 Group (>200.000 CCEL) compared to the heifer group. In Test Day model 4 and 5 additionally the variable BAC completed the model, but weakly significant.

Discussion and Conclusion

Regarding these facts, it is discussable if the antibiotic treatment leads to very short postive effects compared to homeopathic treatment on herd basis while there is no difference in longterm benefit regarding animal cell count or leaving production. To ensure this and assess microbial state of the cows, it is nesessary to investigate milk samples at the end of lactation in further studies.

For this herd it was consequently not necessary to treat mastitis with antibiotics but with a homeopathic alternative, in case of primarly therapy failure in combination with antibiosis.

Antibiosis leads to positive shortterm effects regarding guidelines of mastitis cure definitions of IDF, but it has to be discussed if these definitions take account of the economic long term effects of clinical mastitis therapy.

Furthermore, it has to be concluded that the herd environment and the mangement is able to block any therapy success and has highest preference before starting a therapy programme.

Acknowledgement: Special thanks to Weleda AG (Arlesheim, CH).

Literature available from author peter.klocke@fibl.ch .