

Infections with *Chlamydiae* can be effectively eradicated using herd specific autovaccines in cattle populations

NOLTE, O.*, WEISS, H.-E., & SONNTAG, H.-G.

corresponding author:
Dr. Oliver Nolte
Hygiene Institute, Dept. Hygiene & Medical Microbiology
Im Neuenheimer Feld 324, 69120 Heidelberg/Germany
E-mail: Oliver_Nolte@med.uni-heidelberg.de
Tel.: +49/6221/567812 Fax.: +49/6221/565627

Third Annual Conference on Vaccine Research

Objective: Therapeutic treatment of dairy cows infected with *Chlamydia psittaci*

background

Normally 30-80% of a herd can be infected.

The rate of abortion may reach 30% or more if *Chlamydia* infections are common in a herd while the usual rate is below 1 %

The economical loss is estimated at 1000-1500 \$ / abort*!

Amongst the clinical manifestations are mastitis, arthritis and conjunctivitis as well as pneumoniae in calves.

In sheep herds epidemics are common, in cattle populations epidemics are reported frequently

* calculated as loss of the calf and subsequent loss of milk (30/d) over a period of at least 4-6 month

Standard treatment (Germany) for *Chlamydia* infected cows:

antibiotic treatment using tetracycline i.m.

tetracycline sticks deposited in the uterus

uterine flushes using 5% iodine in ethanol

--- -- -- -- --> expensive

--- -- -- -- --> effectivity varies

Definition: autovaccine or autogenous vaccine

therapeutic vaccine manufactured from a disease causing pathogenic micro-organism — strain and patient specific in veterinary medicine often herd or flock specific

therapeutic — treatment of ongoing infections

immunogenic (?) — modulation of the patients immune system.

intended to stimulate the immune system, not to hit the micro-organism directly—therefore no development of resistance

highly specific, independent of antigenic variability

cheap to manufacture

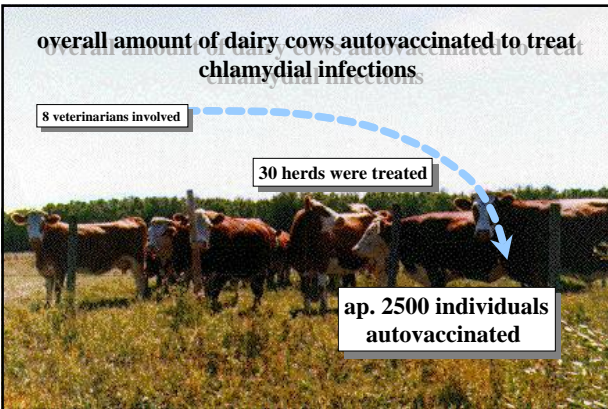
no governmental approval required

overall amount of dairy cows autovaccinated to treat chlamydial infections

8 veterinarians involved

30 herds were treated

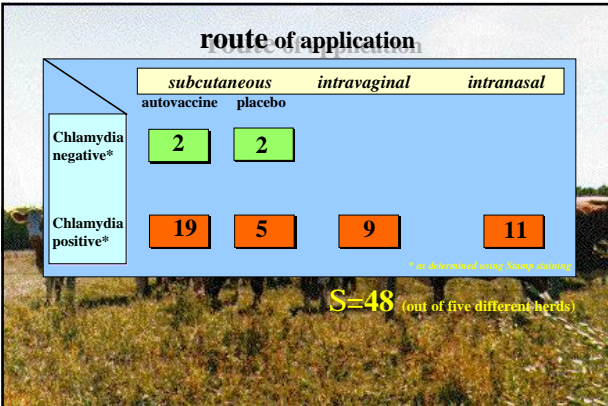
ap. 2500 individuals autovaccinated



route of application

	subcutaneous autovaccine	intravaginal placebo	intranasal	
Chlamydia negative*	2	2		
Chlamydia positive*	19	5	9	11

S=48 (out of five different herds)



Method: Autovaccines were prepared* from index case (i.e. abortion caused by *Chlamydia spec.*).

procedure

cervical swabs (obtained from herds in which the index case was recorded) were screened by Stamp staining of inclusion bodies

herds were treated with the herd specific autovaccine four times (one dose on every 5th day). Randomly chosen *Chlamydia* positive cows were examined in detail

cervical swabs were taken from the chosen cows after completion of autovaccination (i.e., day 28 after 1st dose of autovaccine) to check for the presence of *Chlamydiae*

* patent pending DE/PCT/EP

Stamp staining

routine screening method in veterinary diagnostics* to check for the presence of *Chlamydiae*

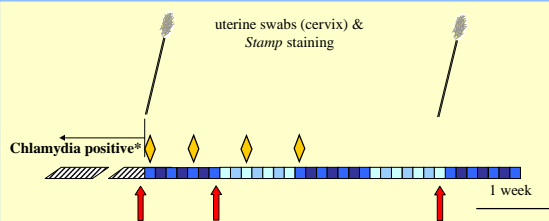
(cervical) swabs are smeared on slides and subsequently stained using carbolfuchsin (Ziehl's stain)—1% acetic acid—0.2% Malachite Green.

both forms of the *Chlamydia* are stained intensively red whereas the background is in light green.

Stamp staining is also good for staining of *Coxiella* and *Brucella*, these micro-organisms differ in their morphology and appearance

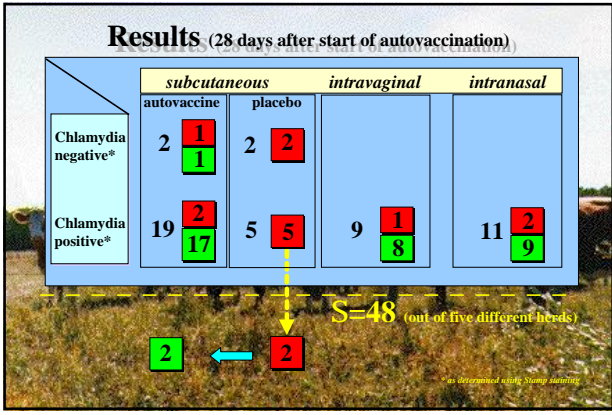
* one of the methods recommended by the Bundesministerium für Ernährung, Landwirtschaft und Forsten (Ministry of food, agriculture and forestry) (order BGBl. I S. 1178; September 1999)

Outline autovaccination



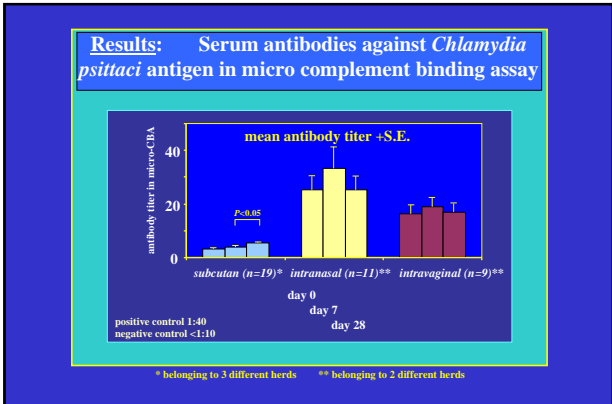
Diagrammatic representation of disease state, immunisation schedule and sampling of blood. (◇) denotes subcutaneous/intranasal or intravaginal immunisation, (▽) and denotes blood/serum sample

* often suffering from metritis and/or reduced fertility



5 groups of animals S=48

Chlamydia positive autovaccine:	41	negative after av:	36	=87.8%
Chlamydia positive placebo:	5	negative after pl:	5	
Chlamydia negative autovaccine:	2	negative after av:	1	
Chlamydia negative placebo:	2	negative after pl:	0	



Conclusions:

Autovaccines seems to be a useful and effective method for the treatment of *Chlamydia* infection.

More than 87% of autovaccinated cows were *Chlamydia* negative afterwards. The veterinarians reported decline to normal abortion rate and normal metritis/abortion incidence in herds treated with the autovaccine.

However, the immunological background remains unknown.

Autovaccines are cheap to manufacture and can be given even to pregnant cows.

The observed side effects were minor, only after intravaginal application cows showed an increased sensitivity. No serious side effects were observed.
