An experience with the use of a PM-AR toxin vaccine containing AR in practice.

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Bordetella bronchiseptica (MB) and Pasteurella multocida (PM) are able to cause Atrophic Rhinitis (AR). The immunity of the sow with PM vaccine resulted in suppression of or disappearance of BB out of the noses of the piglets nursed by these sows. With the use of killed PM-bacterin vaccine, this effect was not demonstrated (2).

The AR pathogenicity of the PM bacteria is caused by the presence of a noncytotoxic-thromboplastin toxin, which can be found in the filtrate bacteria-free supernates (4).

Antibodies that were stimulated by toxins of two PM isolates with a different O-antigenisation on rabbits, appeared to cross protection (4).

For this research the filtrates containing the thromboplastin-thromboplastin toxin were used in incomplete oil-adsurated vaccine. This vaccine was tested on a multiplying herd with 120 sows. The herd had been vaccinated against AR for some years because of persisting AR-problems.

In the beginning AR pathogen BB and PM bacteria were isolated frequently in the piglets. Due to the vaccination of the sows with a BB vaccine, AR-almost disappeared (2).

The AR problem however were persisting. Vaccination with commercial PM vaccine caused no clinical and bacteriological improvement.

Vaccination therefore the sows and gilts were vaccinated intramuscularly with 2 ee PM vaccine 6 and 4 weeks before parturition. In the beginning the piglets of sows which were vaccinated, received vaccination of 1 and 2ee in the first 4 weeks of life. Piglets produced by sows that were vaccinated once a got a vaccination with 2 ee in the 4th week.

In the next gestation a booster-dose of 2 ee was given 3 weeks before parturition.

The all-in-all-out system cannot be applied especially on the herd, therefore an infection (challenge) was maintained in the farrowing house. Initially a bacteriological examination was carried out on ca. 4 ee and 8 week old piglets.

Bers were also collected. The antibodies against the PM-AR toxin were determined with an ELISA method. At the age of 8 weeks the piglets were examined clinically according to the protocol of the AR examination (1, 2).

Results of the clinical examination (102)

The percentage of piglets with clinical AR decreased. Formerly this percentage often amounted to 50%, but after some months it decreased still till 5%.

After a year this percentage was 1%.

Bacteriological examination.

BB was not isolated during the research.

The isolation score of PM showed the fluctuating course. A decline of the PM isolates seems to develop slowly in 4- to 5-week-old piglets.

The titers increased slowly in the piglets. In addition to the vaccine vector between the AR pathogen and AR non-pathogen PM isolates occurred.

Serological examination.

Most sows reacted after vaccination with a clear increase of an anti-PM toxin-titer in sera and colostra.

No decrease in titers was observed with the clinical AR state of these piglets.

Discussion and conclusions.

- Vaccination of sows with the PM toxin reduces the percentage of piglets with clinical AR.
- Among the sows there is a clear variation in PM-AR toxin titer.
- These differences also exist among the piglets of each litter.
- As far as is known, it is especially strongly litter-associated, especially the gilt-litter.
- The intake, for what ever reason, of too little colostrum or colostrum with a low amount of AR toxin antibodies, results in potential AR piglets, in case of a certain infection pressure.
- The possible rapid decline of the AR toxin content (antigen) in the vaccine is a practical problem. Every three months a new charge of vaccine was produced. Differences among the changes can not be excluded completely.

Selected literature.