UDK 636.03→614.9

Izlaganje sa znanstvenog skupa
Conference paper

PRELIMINARY RESEARCH OF SOWS' UDDER HYGIENE ON TEATS' BACTERIAL REDUCTION

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Summary

Research was conducted in order to determine efficiency of sows' udder sanitation concerning reduction of bacteria, which enter through contaminated teats in piglets' organism. The research was carried out in farrowing pen with 90 sows, which were separated into three equal groups. The first group, control, was not treated. In the second group sows' udders were treated with water and in the third group with healthy and ecologically acceptable commercial antiseptic Oxyl® with powerful oxidising bactericidal activity. During the period of 24 days microbiologic purity of the teats was determined by the method of swab before and after teat treatment, and cultivation on nutrient media. Samples were analysed for presence of mesophilic aerobic bacteria which were expressed as their total number per cm^2 (CFU/cm^2) of teat. Study results showed in both treated groups, compared to the control, significantly reduced number of bacteria. Besides, significantly lower bacteria number was determined in the third group treated with antiseptic, compared to the second group, treated only with water. Accordingly, everyday use of udder sanitation, which is commonly component of ruminants' milking hygiene, could also significantly reduce sows' teat bacterial contamination and consequently entering excessive bacteria in the piglets' alimentary system. The following researches should provide the evidence if there exists connection between udder sanitation, reduced number of bacteria as potential causes of piglets' alimentary diseases, and diseases' appearance.

Key words: sows, teat, hygiene, aerobic mesophilic bacteria, piglets.

Introduction

In modern pig production most significant losses occur in suckling and weaned piglets. Furthermore, 60-80% of total mortalities in the perinatal period occur during the first three days of piglets' life (Ekert Kabalin et al., 2008).

The paper was presented at XIV ISAH Congress 2009 „Sustainable Animal Husbandry: Prevention is Better than Cure", Vechta, Germany, 19 th-23rd July 2009.
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Alimentary diseases represent one of the significant causes of such losses. Piglet organism is very sensitive to bacteria from environment and it can be expected, depending on number and species of bacteria and piglet individual resistance, that excessive entering of bacteria through contaminated teats makes predisposition for outbreaks of alimentary diseases.

This raises question in what way effectively reduce entering of bacteria in piglets' organism through contaminated teats and their harmfull effect. Sows' udder hygiene during piglets' suckling period could answer to what extent udder cleanless reduces teats' bacterial contamination and consequently entering bacteria in the piglets' alimentary system.

Material and Methods

Research was done in farrowing pen with appropriate housing conditions and included 90 sows, which were separated into three equal groups. The first group was not treated and represented control. In the second group sows' udders were treated with water and in the third group with healthy and ecologically acceptable commercial antiseptic Oxyl® with powerful oxidising bactericidal activity. The antiseptic was used diluted 1:20 according to producers' instructions. Sows were housed in a farrowing pen for 24 days and every morning the swabs were taken from surface of one cranial teat of each sow by pattern of 1 × 1 cm. In the control group swabs were taken once, and in the second and third group before and after udder treatment with a napkin for one-time use immersed in water or antiseptic. The total number of aerobic mesophilic bacteria was determined in the standard way by culturing them on nutritious agar and incubating at 37°C within 24 hours. The results were expressed as the total number of aerobic mesophilic bacteria per cm2 (CFU/cm^2) of teat. Statistical analysis was performed using statistical software Statistica 8.0 (Statsoft Inc., 2008).

Results

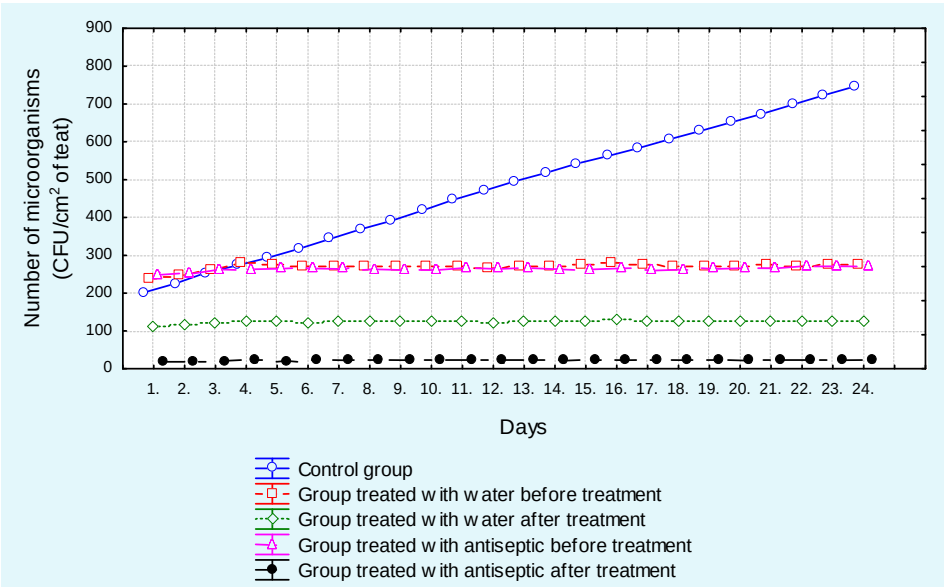
Results are presented in Tab. 1. and Fig. 1.

TAB. 1 – TOTAL NUMBER OF AEROBIC MESOPHILIC BACTERIA PER CM^2 (CFU/CM^2) OF TEAT BEFORE AND AFTER TREATMENT WITH WATER OR ANTISEPTIC

Day	Control group (n=30)	Group treated with water (n=30)		Group treated with antiseptic (n=30)	
		Before treatment	After treatment	Before treatment	After treatment
1	202,15 ± 19,81	237,58^{a} ± 20,62	112,76 ± 7,77	248,10^{a} ± 20,59	18,187 ± 3,22
2	225,59 ± 19,20	248,68^{a} ± 20,68	117,87 ± 6,28	253,74^{a} ± 18,33	19,51 ± 4,04
3	254,15^{a} ± 20,86	260,21^{a} ± 17,49	122,65 ± 8,07	262,51^{a} ± 15,41	20,61 ± 3,55
4	273,40^{ab} ± 23,71	278,30^{a} ± 19,94	128,14 ± 10,26	263,09^{b} ± 14,33	21,77 ± 4,06
5	293,56 ± 23,47	273,45^{a} ± 14,42	127,86 ± 9,73	264,91^{a} ± 1150	20,80 ± 3,16
6	317,08 ± 22,16	269,08^{a} ± 15,35	122,15 ± 8,07	265,12^{a} ± 9,38	21,95 ± 4,10
7	343,08 ± 22,99	272,09^{a} ± 10,94	125,36 ± 7,91	263,63^{a} ± 9,07	22,26 ± 3,85
8	369,01 ± 27,55	269,06^{a} ± 9,58	126,21 ± 7,75	263,01^{a} ± 12,27	21,68 ± 3,22
9	391,10 ± 26,39	272,05^{c} ± 9,71	125,60 ± 7,25	260,77^{c} ± 8,26	22,68 ± 3,68
10	418,40 ± 26,03	272,65 ± 8,58	125,44 ± 9,42	261,06 ± 9,29	21,62 ± 3,32
11	446,31 ± 28,77	271,80^{a} ± 10,12	125,25 ± 8,29	263,66^{a} ± 10,46	21,42 ± 3,61
12	470,86 ± 29,25	263,80^{a} ± 6,13	123,17 ± 7,84	263,73^{a} ± 15,06	21,06 ± 4,01
13	495,73 ± 27,30	268,77^{a} ± 9,74	125,75 ± 7,98	265,31^{a} ± 10,96	21,82 ± 4,37
14	517,79 ± 23,85	270,90^{a} ± 10,42	127,71 ± 9,06	262,80^{a} ± 12,29	21,27 ± 4,08
15	542,12 ± 22,99	273,29 ± 10,23	125,58 ± 7,04	262,47 ± 8,98	21,49 ± 2,81
16	562,16 ± 25,28	278,37 ± 9,53	128,61 ± 7,16	265,21 ± 9,52	22,64 ± 4,17
17	583,23 ± 26,41	276,41 ± 9,77	125,24 ± 7,06	259,46 ± 85,35	21,71 ± 3,97
18	606,38 ± 25,41	269,37^{a} ± 10,48	126,30 ± 8,45	262,41^{a} ± 8,51	22,54 ± 3,49
19	628,61 ± 24,18	268,42^{a} ± 10,09	125,69 ± 7,58	263,78^{a} ± 9,20	22,41 ± 3,45
20	651,49 ± 23,58	271,91^{a} ± 9,57	126,11 ± 7,65	263,79^{a} ± 10,59	21,49 ± 3,16
21	673,97 ± 27,36	274,09^{a} ± 9,31	126,96 ± 8,11	265,54^{a} ± 9,94	21,65 ± 3,00
22	698,09 ± 29,44	270,62^{a} ± 9,30	127,03 ± 8,52	268,56^{a} ± 12,69	21,54 ± 3,80
23	722,86 ± 26,30	275,25^{a} ± 9,00	126,39 ± 5,82	270,78^{a} ± 14,04	22,74 ± 4,00
24	745,98 ± 29,65	274,87^{a} ± 10,12	127,20 ± 7,92	269,84^{a} ± 13,27	22,56 ± 3,97

Values are expressed as mean (x) ± SD; for average microorganism number within the same day means in a raw with no common superscript differ significantly ($P<0.01$); ^{ab}means between groups (within the same raw) statistically differ ($P<0.01$) except values marked with the same letter; ^{c}means marked with the same letter (within the same raw) statistically differ on the level of $P<0.05$

FIG. 1 – TOTAL NUMBER OF AEROBIC MESOPHILIC BACTERIA PER CM^2 (CFU/CM^2) OF TEAT BEFORE AND AFTER TREATMENT WITH WATER OR ANTISEPTIC



Discussion

Hygiene is a scientific discipline investigating how to preserve health and prevent disease (Tofant and Vučemilo, 2001). In ruminants the right udder hygiene is the basic measure in preventing mastitis and reducing postsecretion contamination of fresh milk. It is performed by disinfection measures as the most significant form of medical sanitation (Pavičić et al., 2003a, 2004). In a wide sense disinfection includes procedures of removing and destroying of microorganisms. In the limited sense it includes procedure which reduces number of microorganisms below infection dose and most often is performed by chemical sanitisers (Tofant and Hoić, 1998; Pavičić et al., 2003b). In this research the influence of sows' udder hygiene on teats' bacterial reduction during suckling period of piglets was investigated (Fig. 1). According to the results, a significantly lower total number of aerobic mesophilic bacteria was recorded after treatment of teats with water or antiseptic ($P<0.01$). Besides, significantly lower bacteria number was determined in the group which was treated with antiseptic, compared to the group treated only with water ($P<0.01$) (Tab. 1).

Conclusions

Everyday use of udder sanitation, which is commonly component of ruminants' milking hygiene, could also significantly reduce sows' teat bacterial contamination and consequently entering excessive number of bacteria in the piglets' alimentary system. Following researches should provide the evidence if there exists connection between sows' udder sanitation, reduced number of bacteria as potential causes of piglets' alimentary diseases, and diseases' appearance.

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PRELIMINARNO ISTRAŽIVANJE UČINKA HIGIJENE VIMENA KRMAČA NA SMANJENJE BROJA BAKTERIJA NA SISAMA

Sažetak

Istraživanje je provedeno u svrhu utvrđivanja učinkovitosti sanitacije vimena krmača obzirom na smanjenje broja bakterija, koje preko onečišćenih sisa ulaze u organizam prasadi. Istraživanje je obavljeno u prasilištu s 90 krmača, koje su podijeljene u tri jednake skupine. Prva skupina, kontrola, nije tretirana. U drugoj skupini vime krmača tretirano je vodom, a u trećoj zdravstveno i ekološki prihvatljivim komercijalnim antiseptikom Oxyl®-om sa snažnim oksidativnim baktericidnim djelovanjem. Mikrobiološka čistoća sisa utvrđivana je tijekom razdoblja od 24 dana metodom brisa, prije i nakon tretmana sisa, te nasađivanjem na hranjivi agar. Uzorci su analizirani na prisutnost aerobnih mezofilnih bakterija, a rezultati izraženi kao njihov ukupni broj po cm2 (CFU/ cm2) sise. Rezultati istraživanja pokazali su u obje tretirane skupine, u usporedbi s kontrolom, značajno manji broj bakterija. Osim toga, značajno manji broj bakterija utvrđen je u trećoj skupini tretiranoj antiseptikom, u usporedbi s drugom skupinom, koja je tretirana samo vodom. Prema tome, svakodnevna sanitacija vimena, koja je sastavni dio higijene mužnje preživača, mogla bi značajno smanjiti i bakterijsko onečišćenje sisa krmača te posljedično unos prekomjernog broja bakterija u probavni sustav prasadi. Daljnja istraživanja trebala bi pokazati da li postoji povezanost između sanitacije vimena krmača, smanjenog broja bakterija kao mogućih uzroka probavnih bolesti prasadi i pojave bolesti.

Ključne riječi: krmače, sisa, higijena, aerobne mezofilne bakterije, prasad

Primljeno: 1.9.2009.