

DRUG SENSITIVITY OF STAPHYLOCOCCI CAUSING SUBCLINICAL MASTITIS IN GOATS

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Drug sensitivity was studied of 123 coagulase-positive and coagulase-negative Staphylococcal strains isolated from goats with subclinical mastitis. MIC was determined by double serial dilutions on solid media after Ericsson et al (2). The following drugs were used: penicillin, oxacillin, ampicillin, amoxicillin, cefazolin, cefapirin, cefalexin, ceftriaxone, tetracycline, norfloxacin and ciprofloxacin. Resistance was established against the classical antibiotics penicillin, tetracycline and tylosin and to some cephalosporins. Results indicate that for successful medication of mastitis in goats with ready pharmaceutical drugs the following preparations can be used: gentamicin, third generation cephalosporins, tubocin and fluoroquinolones.

INTRODUCTION

Mastitis in goats, particularly the subclinical forms, create many problems during the lactation period. The prevalent causative agents of mastitis are Staph. aureus and Staph. epidermidis and for this reason both the coagulase-positive and coagulase-negative variants of staphylococci have been recently studied (6). There is abundant information in the literature about the causative agents and their sensitivity to drugs, however most of the data is relevant to mastitis in cows (4,5,7,8). The etiological role of the Staphylococci and their drug sensitivity in goat mastitis is not well known (1). It was the aim of this study to investigate the in vitro antibacterial activity of some contemporary antibiotics against 123 Staphylococcal strains isolated from goats with intramammary infections.

MATERIAL AND METHODS

All bacterial isolates were obtained from mammary glands of goats suffering from clinical and subclinical forms of mastitis. The taxonomic identification of Staphylococcal strains was carried out by the standard techniques [Hott et al, 1994, (3)] based on colony morphology, hemolysis, esculin reaction, Gram stain reaction, catalase production, tube coagulase production and DNA-ase reaction (thermonuclease). The sensitivity of

Staphylococci to all groups of the widely used therapeutic drugs was tested. Minimum inhibitory concentration (MIC) of penicillin (Pn), oxacillin (Ox), ampicillin (Am), amoxicillin (Amx), cefazolin (Cfz), cephapirin (Cfp), cefalexin (Cfl), ceftriaxon (Cft), tetracyclin (Tc), tylosin (T), gentamicin (Gm), streptomycin (Sm), tubocin (Tb), enrofloxacin (e), norfloxacin (N), ciprofloxacin (C), were defined by double serial dilutions on solid nutritive media after Ericsson et Sheris (2).

RESULTS AND DISCUSSION

The attitude of the isolated Staphylococcal strain to antibiotics of the groups of penicillin., cephalosporins, tetracyclin, tylosin, aminoglycosides, tubocin and fluoroquinolons is presented in table 1. Data demonstrate that the up to 100% of Staphylococci exert resistance to the classical penicillins and that the number of strains that are resistant to ampicillin and amoxicillin is smaller. Almost all strains are resistant to tetracyclin and tylosin with MIC over 32 µg/ml in certain isolates. The same strains are resistant to some of the cephalosporins (cefazolin, cephapirin) but sensitive to gentamicin, tubocin and particularly to fluoroquinolons (enrofloxacin, norfloxacin, ciprofloxacin). In spite of the sensitivity there is marked polyresistance of the Staphylococcal strains isolated from goats with subclinical mastitis, mainly in flocks where drug medication has been previously applied. In such a situation satisfactory therapeutic results might be achieved by using ready pharmaceutical products based on aminoglycosides (gentamicin), cephalosporins of third generation, tubocin and fluoroquinolons.

| Resistant strains isolated from patients | Antibiotics | | | | | | | | | | | | | | | |
|--|-------------|------|----|------|-----|-----|------|----|----|-----|-----|----|----|----|---|----|
| | Pn. | Oxi. | Am | Amx. | Cfp | Cfl | Cft. | Gm | Sm | Km. | Tc. | T | R. | E. | N | C. |
| Women with vaginitis (n=25) | 25 | 20 | 17 | 19 | 5 | 5 | 25 | 9 | 17 | 10 | 20 | 72 | 1 | 0 | 0 | 0 |
| Cows with acute endometritis (n=15) | 10 | 7 | 5 | 2 | 2 | 2 | 0 | 2 | 9 | 6 | 11 | 8 | 0 | 0 | 0 | 0 |
| Cows with subclinical mastitis (n=27) | 24 | 8 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 9 | 19 | 16 | 0 | 3 | 2 | 2 |
| Goats with subclinical mastitis (n=27) | 27 | 4 | 7 | 1 | 14 | 12 | 0 | 3 | 5 | 7 | 21 | 19 | 0 | 0 | 0 | 0 |

Table 1. Resistance of *Staph. aureus* to antibiotic drugs.

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ОСЕТЛИВОСТ НА ЛЕКОВИ НА СТАФИЛОКОКИТЕ КОИ ГО ПРЕДИЗВИКУВААТ СУБКЛИНИЧКИОТ МАСТИТИС КАЈ КОЗИТЕ

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Осетливост на лекови беше проучена кај 123 коагуларно-позитивни и коагуларно-негативни соеви стафилококи изолирани од кози со субклинички маститис. Минималната инхибиторна концентрација беше одредена со двојни сериски растворувања на цврст медиум според Ериксон и др (2). Следните лекови беа употребени: пеницилин, оксиклилин, ампицилин, амоксицилин, цефазолин, цефепирин, цефалексин, цефтриаксон, тетрациклин, норфлоксацин и ципрофлоксацин. Беше утврдена отпорност на класичните антибиотици пеницилин, тетрациклин и тизолин и на некои цефалоспирини. Резултатите покадуваат дека за успешно лечење на маститисот кај козите со готови фармацевтски лекаства, може да се користат следните препарати: гентамицин, цефалоспирини од третата генерација, тубоцин и флуороквинолини.