

ISOLATION AND IDENTIFICATION OF BACTERIA FROM LOWER GENITAL TRACT OF FEMALE DROMEDARY CAMEL

Kishan Kumar Sharma, Sumant Vyas¹, S. K. Kashyap and Aminu Deen²

Department of Microbiology
College of Veterinary and Animal Science, Bikaner-334001 INDIA

ABSTRACT

Twenty six female adult multiparous dromedary camels belonging to the herd of National Research Centre on Camel, Bikaner were taken for the present study before first mating at the onset of breeding season. Vaginal smears/samples were taken with sterile swabs using a swab holder of 30 cm length. The samples were taken before first mating during the initial period of breeding season. Samples were processed by standard procedures and isolated samples were identified by primary and secondary biochemical tests along with their growth characteristics. Antibiotic sensitivity test was applied by disc diffusion method. Out of 26 samples 4 samples (15.4 %) failed to show any growth despite of duplicate culture, 8 (30.8%) samples had only one isolate, 11 (42.3 %) samples had 2 isolates, 2 (7.7 %) samples had 3 isolates and only 1 (3.8 %) sample had 5 isolates. Out of these 41 isolates, *E. coli*, *Staphylococcus* spp., *Pseudomonas* spp., *Bacillus* spp., *Micrococcus* spp., *Serratia* spp., *Klebsiella* spp., *Salmonella* spp., *Corynebacterium* (*Actinomyces*), *Pasturella* spp., and *Proteus* spp. constituted 21.9, 14.6, 14.6, 9.8, 7.3, 7.3, 7.3, 4.9, 4.9, 4.9 and 2.4 per cent, respectively. Gram negative bacteria (63.4 %) were found in slightly higher percentage than Gram positive (36.6%). Low bacterial yield (No. of isolates/sample) reflects otherwise sterile genital tract.

Key words: Bacteria, genital tract, vagina, camel, dromedary.

Introduction

The one humped camel (*Camelus dromedarius*) is a seasonal breeder with a relatively short breeding period, when increased ovarian activity is exhibited. In India, the breeding season of the camel extends from December through March (Khanna *et al.*, 1990). The reproductive pathology of the camel is less well understood and until recently, there was little information about bacterial infertility in female dromedary camels. Pyometra has been reported in Indian camel (Chauhan and Kaushik, 1992). The classical venereal microorganisms *Campylobacter foetus* and *Trichomonas foetus* were reported to be isolated from the uteri of barren breeding camels (Wernery and Amjad Ali, 1989; Wernery, 1991; Wernery and Wernery, 1992). The detection, prevention and control of venereal diseases should be an important component of camel breeding programme. Therefore the present study was undertaken to isolate and identify the bacterial species from lower genital tract.

Materials and Methods

Experimental animals

Twenty-six female adult, multiparous dromedary camels belonging to the herd of National Research Centre on Camel were taken for the present study. The camels ranged in age from 8 to 12 years, and had normal reproductive history.

Sample collection and processing

The samples were taken before first mating during the initial period of breeding season. The camels were restrained in sitting position for sample collection. Vaginal smears/samples were taken from as anterior as possible with sterile swabs using a swab holder of 30 cm length (Wernery and Kumar 1994). After collection samples were kept in transport medium (Yadav, 2002) and brought to the laboratory within 2 h in sterile containers under refrigerated conditions (or at 37° C) and processed immediately. A loopful material was transferred to blood agar, nutrient agar and McConkey agar plates re

¹Senior Scientist, and Corresponding author National Research Centre on Camel, P. B. No. 07, Bikaner- 334 001 India.
email: sumantv@scientist.com

²Principal Scientist, National Research Centre on Camel, P. B. No. 07, Bikaner- 334 001 INDIA.

Table 1: Number of isolates per sample

Number of isolates	Number of samples
0	4 (15.4)
1	8 (30.8)
2	11 (42.3)
3	2 (7.7)
4	-
5	1 (3.8)

Figures in parenthesis indicates percentage of total number of isolates.

Table 2: Types of bacteria isolated from the vagina of dromedary camel

Types of bacteria	Per cent of isolates
<i>E.coli</i>	21.9 (9)
Staphylococcus spp.	14.6 (6)
Pseudomonas spp.	14.6 (6)
Bacillus spp.	4 (9)
Micrococcus spp.	7.3 (3)
Serratia spp.	7.3 (3)
Klebsiella spp.	7.3 (3)
Salmonella spp.	4.9 (2)
Corynebacterium (Actinomyces)	4.9 (2)
Pasturella spp.	4.9 (2.4)
Proteus spp.	2.4 (1)
Total	100 (41)

Figures in parenthesis (bracket) denotes number of isolates.

Table 3: Antibiotic sensitivity pattern against commonly used antibiotics is obtained as follows:

Antibiotic	Sensitive	Intermediate	Resistant
Gentamicin	37	3	1
Penicillin	14	12	15
Amoxycillin	35	4	2
Streptomycin	36	3	2
Tetracycline	41	-	-
Oxytetracycline	41	-	-
Cephalexin	32	6	3
Ciprofloxacin	37	3	1

spectively. The samples were replicated after incubation in transport medium.

The colonies, which appeared following incubation, were isolated and examined for morphological features by microscopy and stored in nutrient agar slants. The isolated samples were then identified on the basis of standard primary and secondary biochemical test (Cruikshank *et al.*, 1975; Cowan and Steel, 1973 and Carter *et al.*, 1994). Antibiotic sensitivity test was applied by disc diffusion method (Bauer *et al.*, 1966).

Results

Out of 26 samples 4 samples (15.4 %) failed to show any growth despite of duplicate culture, 8 (30.8%) samples had only one isolate, 11 (42.3 %) samples had 2 isolates, 2 (7.7 %) samples had 3 isolates and only 1 (3.8 %) sample had 5 isolates (Table 1). Out of these 41 isolates, *E. coli*, *Staphylococcus* spp., *Pseudomonas* spp., *Bacillus* spp., *Micrococcus* spp., *Serratia* spp., *Klebsiella* spp., *Salmonella* spp., *Corynebacterium* (*Actinomyces*), *Pasteurella* spp., and *Proteus* spp constituted 21.9, 14.6, 14.6, 9.8, 7.3, 7.3, 7.3, 4.9, 4.9 and 2.4 per cent, respectively (Table 2). Gram negative bacteria (63.4 %) were found in slightly higher percentage than Gram positive (36.6%). Low bacterial yield (No. of isolates/sample) reflects otherwise sterile genital tract. The in vitro efficacy of the antibiotics against the isolates is presented in the Table 3. The oxytetracyclin was found to be most effective.

Discussion

The present study was undertaken to isolate and identify the bacterial species from lower genital tract of the dromedary camel before first mating at the onset of breeding season.

Low bacterial yield (number of isolates/samples) reflect genital tract is otherwise sterile region.

The isolation of *E.coli*, *Corynebacterium*, *Staphylococcus*, *Pseudomonas* and *Klebsiella* from vaginal swabs has been reported earlier (Chauhan *et al.*, 1987 and Wernery and Kumar, 1994). The isolation of the *Bacillus*, *Micrococcus*, *Serratia*, *Salmonella*, *Pasteurella* and *Proteus* spp. from the non-infective vagina of dromedary camel is being reported for the first time. Types of bacteria obtained reflect skin and gastrointestinal tract as the main source of contamination of genital tract from its flora is established.

In this study only opportunistic microorganisms have been isolated. To what extent opportunistic bacteria can be involved in the etiology of infection in dromedary genital tract has not been yet determined.

References

- Bauer, A.W. *et al.* (1966) *Amer. J. Clin. Path.* **45**: 496.
 Carter, M.E. *et al.* (1994) *Clinical Veterinary Microbiology*. Wolfe Publishing Company, Mosby- Year Book Europe Ltd. pp. 645.
 Cowan S. T. and Steel, K.J. (1973) *Manual for the Identification of Medical Bacteria*. Cambridge University Press, Cambridge, London. pp. 192.
 Cruikshank, R. *et al.* (1975) *Medical Microbiology* Vol.II 12th ed. Churchill Livingstone, Edinburgh, London and New York.
 Chauhan, R.S. *et al.* (1987) *J. Remount Vet. Corps.* **26**:1-5.
 Chauhan, R.S. and Kaushik, R.K. (1992) *Br. Vet. J.* **148**: 1, 84-85.
 Khanna, N.D. *et al.* (1990) *Indian J. Anim. Sci.* **60**: 1347-1354.
 Yadav, G. (2002) *Bacterial determinants of repeat breeding in cattle*. M.V.Sc. Thesis, Rajasthan Agriculture University, Bikaner.
 Wernery, U. and Kumar, B. N. (1994) *J. Camel Pract. Res.* **2**: 85-86.
 Wernery, U. and Amjad Ali, S. (1989) *Dtsch. Tierarztl. Wschr.* **96**: 497-498.
 Wernery, U. (1991) *J. Vet. Med. B.* **38**: 523-528
 Wernery, U. and Wernery, R. (1992) Proc. 1st Intl. Camel Conf. U.A.E. 155-158.