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Bacterial Flora of Poultry Semen and Their Antibiotic Sensitivity Pattern

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Abstract

A total of 30 semen samples collected from ten breeding Vanaraja birds were subjected to bacteriological examination. All the samples revealed the presence of one or more than one type of bacteria. The organism isolated were E. Coli, Kluyvera ascorbata, Salmonella enteritidis, Pseudomonus, Serratia plymuthica and Klebsiella. Antibiogram revealed that the organism were highly sensitive to norfloxacin (95.54%), ciprofloxacin (90.90%) and ceftraixone (90.90%) and less effective drugs were amoxicillin (10.90%), cephalothin (23.63%) ,cephalaridine (23.63%) and gentamicin (41.82%).

Keywords: Poultry semen, bacterial flora, antibiotic sensitivity.

I. Introduction

Artificial Insemination (AI) has received considerable importance in developing poultry for commercial production. Successful AI greatly depends on good quality semen. Contamination of semen is a major factor influencing the effectiveness of AI in poultry. The vaginal portion of oviduct is the most probable site of contamination of bacterial organisms resulting in contamination of semen. Various workers (Reiber *et al.*,1995; Cole *et al.*,2004) reported that Salmonella, Staphylococcus spp, E. coli and Campylobacter can be vertically transmitted through transovarian route (Donoghue *et al.*,2004) thus affecting fertility, embryonic development and also spread of infection to the offspring. Sexton *et al.*,(1980) stated that gentamicin when used in poultry semen extenders improves the fertility, embryo survivability and hatchability. Very limited information is available on bacteriology of poultry semen and hence the present work was undertaken to isolate the bacterial flora of poultry semen and study their antibiotic sensitivity pattern.

II. Materials and Methods

A total of 10 sexually active mature cockerels of Vanaraja (2.5 to 4.5 kg bw) chicken aged 6 to 7 months maintained at All India Coordinated Research Project on Poultry in individual cages at college of Veterinary Science, Khanapara, Guwahati were used in the present study. The cockerels were trained to respond to massage technique for ten to fifteen days and semen was collected from each bird twice a week as per abdominal massage method of Burrows and Quinn (1937). Isolation and identification of bacteria were done as per method described by Cruickshank *et al.*,(1975). The semen samples were inoculated in blood agar (5% sheep blood) and serum dextrose agar plates and respectively inoculated aerobically and microaerophilically at 37^{o}c for 24 – 48 hour. All the isolated strains were tested for in

vitro sensitivity to 7 antibiotics by single disc diffusion method (Ellner, 1978) with commercially available bio-disc (Hi-media).

III. Results and Discussion

All the 30 semen samples tested were found positive for one or more than one type of bacteria. Out of thirty positive samples 12 and 18 yielded one and more than one type of bacteria respectively. The different types of bacteria isolated were *E. Coli (18), Kluyvera ascorbata(11), Salmonella enteritidis(9), Pseudomonus(7), Serratia plymuthica(5)* and *Klebsiella(5)*.

Table.1 Bacteria isolated from poultry semen and their sensitivity to different antibiotics

Types of bacteria	**Ns of strains tested**	**Number of strains sensitive to**						
		Norfloxacin	Ciprofloxacin	Ceftraixone	Gentamicin	Cephalothin	Cephalaridine	Amoxicillin
E. Col i	18	18	17	17	8	3	3	-
Kluyvera ascorbata	11	11	11	11	7	4	4	-
Salmonella enteritidis	9	9	9	9	-	-	-	-
Pseudomonus	7	4	3	3	2	-	-	-
Serratia plymuthica	5	5	5	5	3	3	3	3
Klebsiella	5	5	5	5	3	3	3	3
Total	55	52 (95.54)	50 (90.90)	50 (90.90)	23 (41.82)	13 (23.63)	13 (23.63)	6 (10.90)

Figures in parenthesis indicates percentage

Isolation of one or more of these organisms from poultry semen has been reported by earlier workers (Reiber *et al.*,1995; Donoghue *et al.*,2004). *E. Coli* ranked high among the isolates in the present study is similar to the finding of Reiber *et al.*,(1995). Many earlier workers (Reiber *et al.*, 1995; Donoghue *et al.*,2004; Omprakash and Venkatesh,2006; Iaffaldano *et al.*,2010) reported that most frequently isolated genera from poultry semen included Escherichia and Salmonella. Isolation of *E. Coli, Salmonella and Pseudomonus* in the present study is significant as these are considered to be abnormal micro flora of semen and may reduce the survivability of spermatozoa, fertility, embryo survivability and hatchability. Most of the other bacteria that were isolated were endemic to poultry semen and were common environmental bacteria. This indicates that the environment and feed are common sources of bacterial contamination in poultry semen. Antibiotic sensitivity pattern of the organisms revealed that the organisms were highly sensitive to norfloxacin(95.54%) followed by ciprofloxacin(90.90%) and ceftraixone(90.90%).

Amoxicillin(10.90%),cephalothin(23.63%),cephalaridine(23.63%)and gentamicin (10.90%) were least effective. Microorganisms are present in every ejaculate of poultry. It is very difficult to eliminate completely the bacterial contamination of semen used in artificial insemination. For better

fertility, hatchability and reduction of embryonic mortality the most effective antibiotic should be routinely incorporated in the semen extender to reduce the bacterial contamination appreciably.

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