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RESEARCH ARTICLE

VAGINAL HEALTH ASSESSMENT OF ANESTRUS BUFFALOES TREATED WITH INTRAVAGINAL PROGESTERONE INSERTS

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ABSTRACT

A study was undertaken to assess the vaginal health status in anestrus buffaloes treated with progesterone impregnated intra-vaginal devices. Bacterial culture swab taken at before insertion and immediately after removal of the CIDR and sponge revealed that the predominant bacterial species identified in all the groups were *Escherichia coli* and *Staphylococcus spp*. The isolates obtained were subjected to pathogenicity test that revealed all the isolates were non-pathogenic.

INTRODUCTION

Buffaloes represent an integral part of the agricultural economy in India and other some developing countries. According to the last FAO census, Buffaloes constitute 36 per cent of total bovine population in India and account for 56 per cent of country's total milk production (FAOSTAT, 2008). One of the major factors of economic importance in buffalo reproduction is the delayed return to postpartum cyclicity (Honparkhe *et al.,* 2008). The incidence of true anestrus in buffaloes in the Indian subcontinent varies from 19–74 per cent (Kumar and Kumar, 1995; Tomar *et al.,* 2002). Administration of exogenous progestins is considered appropriate for noncyclic or anestrus postpartum buffaloes (Lakra *et al.,* 2003), for the resumption of estrus with normal estrous cycle length (Rhodes *et al.,* 2003). Progestagens can be given by oral administration (Shankar *et al.,* 1996), subcutaneous (Kang *et al.,* 2007) or intravaginal insertion (Kacar and Aslan, 2004). Inclusion of progesterone-releasing intravaginal devices (PRID) has been the traditional treatment of choice for estrous synchronization (Walsh *et al.,* 2007). However, intravaginal devices provided an opportunity for bacterial vaginitis. Suarez *et al.* (2006) reported that the presence of a foreign body, such as sponge in the vagina stimulated bacterial growth and local mucous secretion during sponge treatment and these changes generated a localized inflammation in ewes. In dairy cows, bacterial culture of swabs of the vagina after treatment with PRID for 7 days period revealed moderate growth of coliforms, environmental *Streptococcus spp.* and *Staphylococcus spp.* and other gram-positive, rod-shaped organisms (Walsh *et al.,* 2008). However, no published data is available on effects of intravaginal devices to the number of bacteria in vaginal flora of buffaloes. Hence, the present study was undertaken for the assessment of vaginal health in anestrus buffaloes treated with intravaginal progesterone inserts.

MATERIALS AND METHODS

Vaginal health assessment of buffaloes treated with intravaginal progesterone inserts was carried out at the Department of Veterinary Microbiology, Veterinary College and Research Institute, Namakkal. A total number of 33 mature buffalo-cows reared in small holder farms in and around Namakkal district were used. These buffalo-cows were inserted with intravaginal progesterone inserts like CIDR (group I, 10 Nos. and group II, 10 Nos.) and sponge (group III, 13 Nos.) intravaginally. Before insertion and immediately after removal of the CIDR and sponge, a sterile bacterial culture swab was inserted along the dorsal vaginal wall to approximately 10 cm cranial to the vulva and a swab of the vaginal mucosa was taken. Vaginal swabs were collected after thoroughly cleaning the vulva with water followed by surgical spirit. Thirty three numbers of vaginal swabs were collected from buffalo-cows inserted with CIDR and sponge both at the time of insertion and removal of intravaginal progesterone inserts. Thus a total of 66 vaginal swabs were collected. Immediately after collection, sterile nutrient broth was added to each sample and incubated at 37^0C for overnight. These swabs were inoculated by streaking method on Nutrient agar, blood agar, MacConkey agar, Mannitol salt agar and Eosin Methylene Blue agar. The inoculated media were incubated, both under aerobic and anaerobic conditions, at 37 ^{0} C and examined after every 12 hours till 48 hours post inoculation for the presence of any growth. Growth characteristics of the isolates were recorded. The cultures were purified by subculturing and were refrigerated for further studies. The bacteria isolated showed the characteristic colony, were gram stained and confirmed by standard biochemical tests such as catalase test, oxidase test, indole test, methyl-red test, voges-proskauer test, citrate utilization test, growth on congo red agar and sugar fermentation tests as described by Barrow and Feltham,1993. Each isolate was characterized on the basis of staining behaviour, size, motility and cultural and biochemical tests. The pathogenicity tests of the isolates were carried out as per Quinn *et al.,* 1994.

RESULTS AND DISCUSSION

Prior to insertion of CIDR, 60 per cent (12/20) of the swabs collected from buffaloes was found to contain bacterial growth in culture. Of these samples, more than one bacterial species were found in

35 percent (7/20) of swabs collected. Prior to insertion of vaginal sponge, 46.20 per cent (6/13) of the swabs collected from buffaloes was found to contain bacterial growth in culture. Of these samples, more than one bacterial species were found in 23 per cent (3/13) of swabs collected. The predominant bacterial species identified in all the groups were *Escherichia coli* and *Staphylococcus spp.* In addition, *Proteus spp., Klebsiella spp.* and gram positive anthracoids were also found. Culture of swabs collected at removal of CIDR revealed that bacterial growth was found in the 80 per cent of (16/20) buffaloes. Of these samples, more than one bacterial species were found in 40 per cent (8/20) of vaginal swabs examined. Culture of swabs collected at removal of sponge revealed that bacterial growth was found in the 53.80 per cent of (7/13) buffaloes. Of these samples, more than one bacterial species were found in 30.80 per cent (4/13) of vaginal swabs examined. The predominant bacterial species identified in the swabs collected at removal of intravaginal inserts were *E. coli* and *Staphylococcus sp.* In addition gram positive anthracoids and *Proteus spp.* were also found. Bacterial isolates obtained in the present study were subjected to pathogenicity test and revealed that all the isolates were non-pathogenic. Hence, these organisms were considered as the commensal bacterial growth in the vagina of buffaloes. These findings were supported by several authors (Bulman *et al.,* 1978; Williams *et al.,* 2005 and El-Jakee *et al.,* 2008). They isolated *Escherichia coli, Klebsiella spp., Proteus spp.,* environmental streptococci and staphylococci, and other gram-positive, rod-shaped organisms from the vagina of apparently healthy buffaloes. Moreover, in the present study, the presence of non-pathogenic isolates at removal of intravaginal device did not influence conception, as the overall conception rate of 60 per cent and above was observed in the present study in the groups I to III as reported earlier by Walsh et al., 2008 in dairy cows.

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