

## ISOLATION AND IDENTIFICATION OF UTERINE BACTERIA ASSOCIATED WITH ENDOMETRITIS IN COWS

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### ABSTRACT

Twelve cows with the clinical history of repeat breeding were sampled for uterine swab followed by the identification and isolation of bacteria using various conventional and biochemical tests. Out of 12 samples collected, five types of isolates were identified. Among the isolates, *Corynebacterium* spp. (32%) was the most predominant bacteria followed by *Bacillus* spp. (28%), *Staphylococcus* spp. (24%), *E. coli* (12%) and *Salmonella* spp. (4%).

**Keywords:** Bacteria, Cow, Endometritis, Identification, Isolation, Uterine swab

Endometritis, the inflammation of the superficial layers of uterus, alters the uterine health leading to conception failure and repeat breeding condition in bovines. The causes of endometritis are multifactorial, of which bacterial endometritis has drawn research attention. In most Indian reports, isolation was carried out from the cervico-vaginal mucus of the infected cows and uterine infection was considered based on the nature of cervical mucus (Sarkar *et al.*, 2006). However, this does not represent the true picture of bacteria present in uterus. Uterine swab is the most accurate method of obtaining samples for the identification of bacteria (Bonnett *et al.*, 1991). In the present study, the isolation, identification and biochemical characterization of the various bacterial isolates was done from the uterus of endometritic cows using uterine swab.

Twelve apparently healthy cross-bred (Holstein-Friesian) cows having normal duration of estrus cycle were selected. Initially, the clinical condition of endometritis was diagnosed by visual observation of

cervico-vaginal mucus and the presence of pus flakes the uterine lavage. The subsequent confirmation was done on the basis of polymorphonuclear (PMN) cell count (Gilbert *et al.*, 2005). The cows with or without muco-purulent to purulent cervical discharge during trans-rectal examination, the presence of pus flakes in the uterine lavage and with PMN cell count above  $\geq 5\%$  were diagnosed with clinical endometritis. The uterine samples were collected using swabs and identification of bacteria was done.

Out of 12 cows, five (41.3%) were suffering from clinical endometritis as evidenced by the presence of mucopurulent cervico-vaginal discharge and 9.2% PMN cell count in the uterine lavage. The remaining seven (58.3%) cows had sub-clinical endometritis as evidenced by the presence of pus flakes and 7.3% PMN cell count in the uterine lavage (Gilbert *et al.*, 2005). The higher proportion of sub-clinical endometritis can be speculated as the major cause of repeat breeding in such cows as reported earlier (Salasel *et al.*, 2010). Nevertheless, irrespective of the type of endometritis, the higher mean number of PMN cell count ( $8.08 \pm 0.6\%$ ) than the threshold cut off ( $>5.0\%$ ) for endometritis confirm the state of infection in the cows of present study.

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Out of 25 isolates obtained from 12 endometritic cows, the majority were dominated by *Corynebacterium* spp. (32%) followed by *Bacillus* spp. (28%), *Staphylococcus* spp. (24%), *E. coli* (12%) and *Salmonella* spp. (4%). The pattern and type of bacteria reported from the endometritic cows in our study is supported by previous report (Pothmann *et al.*, 2015). In present study, *Corynebacterium* spp. was isolated from 80% cows with clinical endometritis. The present finding supports previous report suggesting predominance of the species (Pothmann *et al.*, 2015) and is associated with severe endometritis (Huszenicza *et al.*, 1999). Moreover, the proportion of *Bacillus* spp. and *Staphylococcus* spp. isolated in the present study were similar to the earlier report (Rao and Seshagiri, 1997). In contrast to previous report (Barman *et al.*, 2013), the proportion of *E. coli* in endometritis was relatively less in the present study. This might be due to the difference in the type of sample obtained for isolation. *Salmonella* spp. was isolated only from one cow with clinical endometritis in the present study. Allied reports are meager in this line. However, the present finding supports the only report communicated elsewhere (Deori *et al.*, 2004).

In the present study, mixed colonies were found in 83.3% cases whereas single isolates were found in 16.6% cases. The incidence of Gram positive bacteria was higher in present study and is supported by the earlier report in which samples were directly taken from the uterus (Shukla and Sharma, 2005). However, in contrast to the previous report (Sarkar *et al.*, 2006), the occurrence of Gram negative bacteria was lower in this study. The difference in the source of collection of the samples as uterine swab in this study and cervico-vaginal mucus in previous study, for bacterial isolation may be one of the reasons for the discrepancy.

In conclusion, the results of this study revealed that *Corynebacterium* spp. (32%) appears as the most predominant bacteria followed by *Bacillus* spp. (28%), *Staphylococcus* spp. (24%), *E. coli* (12%) and *Salmonella* spp. (4%) causing endometritis in cows.

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