

## INCIDENCE OF FUNGAL MASTITIS IN CATTLE

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### ABSTRACT

*A study was undertaken to find out the incidence of fungal mastitis in cattle. Out of 200 clinical cases of mastitis, 17 (8.5 %) were found to have been caused by fungi and 9 (4.5%) were identified to be mixed infection of fungi and bacteria. The yeast and yeast like fungi isolated were *Candida tropicalis*, *Candida parapsilosis*, *Candida guilliermondii*, *Geotrichum candidum*, *Trichosporon cutaneum*, *Saccharomyces cerevisiae*, *Torulopsis sp.* and *Rhodotorula rubra*. The mould isolates were *Sepedonium sp.*, *Cladosporium carrionii*, *Penicillium sp.*, *Trichophyton verrucosum* and *Aspergillus ochraceous* group.*

**Key words:** Fungal Mastitis.

### INTRODUCTION

Mastitis is a disease complex of different etiology and different degrees of intensity along with variations in duration and residual effects (Schalm *et al.*, 1971). The causative agents of mastitis may contaminate the milk from affected cows and many render it unsuitable for human consumption. The various agents which cause clinical and subclinical mastitis may be hazardous to human health. In India, Singh and Singh (1968), Monga and Kalra (1971), Sharma *et al.* (1977), Misra and Panda (1986), Mehrotra and Rawat (1989) and Singh *et al.* (1992) reported various type of fungi as the etiological agents of mastitis in dairy cattle. The present study was undertaken to isolate the fungal organisms from clinical cases of mastitis in cattle.

### MATERIALS AND METHODS

#### Milk Sample

Two hundred milk samples were collected from 161 cows showing clinical mastitis in villages located near Trichur district of Kerala state, India. The samples were collected under aseptic condition in sterile test tubes and transported immediately to the laboratory on ice. Primary inoculation was done in Tryptose Soya agar and duplicate plates of Sabouraud's dextrose agar. Tryptose Soya agar plate and one plate of Sabouraud's dextrose agar were incubated at 37°C and the other Sabouraud's dextrose agar at room temperature for seven days. Subculturing was done until pure colonies were isolated.

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### Identification of Yeast and Yeast like fungi

The isolates of yeast recovered from the milk samples were identified based on their colony character, microscopic morphology, presence or absence of capsules, growth at 25°C with cycloheximide, growth on cornmeal agar containing Tween 80, germ tube test, urease at 25°C, growth in Sabouraud's dextrose broth, sugar fermentation and sugar assimilation test employing various sugars. The identification was done as per the guidelines recommended by Larone (1976) and Al-Doory (1980).

### Identification of moulds

Moulds were identified by the rate of growth, general topography, texture, surface pigmentation, reverse pigmentation and microscopic examination using the adhesive tape technique and slide culture.

## RESULTS AND DISCUSSION

Out of 200 samples examined, 26 samples yielded fungal agents, 121 samples were positive for bacteria and the remaining 53 were negative for fungal as well as bacterial agents (Table 1). In this study, the incidence of fungal agents in clinical cases of mastitis was 13%. Higher rates of incidence 29.27% and 34% were

reported by Simaria and Dholakia (1986), Sudarwanto (1987) respectively. The relatively higher incidence of fungal mastitis in this study may be due to the extensive and indiscriminate use of antibiotics for treatment of mastitis because some of the samples were collected from the mastitic cases, which had been treated with antibiotics for the same. In the present study, 4.5% of the milk samples gave bacteria and fungi. Misra and Panda (1986) isolated both bacteria and fungi from 20% of the cases. Most of the species of fungi isolated in this study have been reported earlier as the cause of mastitis (Monga and Kalra, 1971; Jand and Dhillon, 1975; Sharma et al., 1977; Shah et al., 1986; Singh et al., 1992).

Thirteen species of yeasts, yeast like fungi and mould were isolated during the present study (Table 2). *Candida tropicalis* (26.92%) was the most frequently isolated yeast and yeast like fungi followed by *Geotrichum candidum* (15.38%), *Trichosporon cutaneum* (11.53%), *Candida parapsilosis* (7.69%), *Candida guilliermondii* (3.84%), *Saccharomyces cerevisiae* (3.84%), *Rhodotorula rubra* (3.84%) and *Torulopsis* sp. (3.84%). *Penicillium* sp. (7.69%) was the most frequently isolated mould followed by *Sepedonium* sp. (3.84%), *Aspergillus ochraceus* group (3.84%), *Cladosporium carrionii* (3.84%) and

**Table 1. Per cent distribution of bacterial and fungal isolates from clinical mastitis in cattle**

No. of samples screened	No. of samples positive for			No. of samples negative
	Bacteria	Fungus	Both	
200	121 (60.5%)	17 (8.5%)	9 (4.5%)	53 (26.5%)

*Trichophyton verrucosum* (3.84%). The present study indicated that *Candida* sp. alone contribute 38% of mycotic mastitis which is in agreement with the findings of Gupta et al. (1981). *Candida tropicalis* was the most frequently isolated yeasts from the mastitic milk samples examined. Richard et al (1980); Gupta et al. (1981) and Simaria and Dholakia (1986) reported relatively more frequent isolation of *Candida tropicalis* from mastitis udder than any other species of *Candida*. It was interesting to note that *G. candidum* was isolated from all the four quarters of the animal. Misra and Panda (1986) and Costa et al. (1993) isolated *G. candidum* from mastitic milk samples. Involvement of two different fungal agents, *C. tropicalis* and *C. guilliermondii* was evidenced by isolation of these agents from two quarters of same animal. In another case, two different genera *C.*

*parapsilosis* and *R. rubra* were isolated from two quarters. This indicates that multiple fungal infections could occur in animals as the case of multiple bacterial infections. The higher incidence of yeast infection over moulds may be attributed to their ability to reproduce and propagate well in the udder tissue just like bacteria (Ainsworth and Austwick, 1959).

In majority of the cases, yeast and yeast like fungi produced chronic mastitis in which hardness of udder and reduction in milk yield with watery milk and flakes were noticed. In cases of mastitis where in mould was involved produced chronic mastitis characterized by hardness of udder and reduction in milk yield with straw coloured milk, viscid in consistency.

**Table 2. Prevalence of various fungi from clinical cases of mastitis**

Name of fungi	Samples positive	Per cent
<b>Yeast and Yeast like fungi</b>		
<i>Rhodotorula rubra</i>	1	3.84
<i>Torulopsis</i> sp.	1	3.84
<i>Saccharomyces cerevisiae</i>	1	3.84
<i>Candida guilliermondii</i>	1	3.84
<i>Candida parapsilosis</i>	2	7.69
<i>Trichosporon cutaneum</i>	3	11.53
<i>Geotrichum candidum</i>	4	15.38
<i>Candida tropicalis</i>	7	26.92
<b>Mould</b>		
<i>Penicillium</i> sp.	2	7.69
<i>Sepedonium</i> sp.	1	3.84
<i>A. ochraceous</i> group	1	3.84
<i>Cladosporium carrionii</i>	1	3.84
<i>Trichophyton verrucosum</i>	1	3.84

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