

Dept. of Food Hygiene,
Fac. of Vet. Med., Beni-Suef, Cairo University,
Head of Dept. Prof. Dr. S.D. Deeb.

STUDIES ON SUBCLINICAL MYCOTIC MASTITIS IN COWS

(With 2 Tables)

By

A.M. EL-KHOLY and H.I. HOSEIN*

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دراسات عن التهاب الضرع الفطري الكامن في الأبقار

عادل الخولي ، حسين عبدالعال

تم فحص اللبن من ١٨٠ بقرة ضرعها غير مصاب ظاهريا وذلك بإختيار الشالم للكشف عن التهاب الضرع الكامن وقد أظهر الإختيار إيجابية ٣٠ حالة (١٦.٦٪) من الأبقار . كما تم فحص عينات اللبن للفطريات المختلفة حيث تم عزل وتصنيف فطر الكانديدا ألبيكانس من عينتان (١٠٪) من اللبن . كما أثبتت الدراسة ضراوة عترة الكانديدا ألبيكانس وذلك عن طريق حقنها في أرانب سليمة إكلينيكية وقد درست حساسية هذه الفطريات المعزولة لعقاري الميكوستاتين والكلوتريمازول وقد ثبت حساسية عالية لهذا الفطر لكلا العقارين وأثبتت النتائج أهمية الأخذ في الإعتبار التهابات الضرع الناتجة من الإصابات الفطرية لخطورتها الإقتصادية والوبائية في الحيوانات والإنسان .

SUMMARY

In this study a total of 180 milk samples were collected from apparently healthy lactating udders of 180 cows. Milk samples were subjected to Schalm test for detection of subclinical mastitis. The test gave positive reaction in 30(16.6%) of examined cows. On the other hand, milk samples were subjected to mycological examination. Only two Candida albicans isolates were recovered. These isolates were proved to be pathogenic for rabbits and sensitive to both Nystatin and Clotrimazol in vitro. The public health significance of these findings was discussed.

INTRODUCTION

Bovine mastitis still constitutes a major problem for dairy industry as it reduces the milk yield and shorten the productive life of affected dairy animals. The affected quarters may appear healthy and could act as a potential source of infection among dairy cattle. Therefore it is necessary to detect the disease as early as possible because of its public health and economic importance.

*: Dept. of Vet. Medicine, Faculty of Vet. Med., Beni-Suef, Cairo University.

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O'DONOVAN *et al.* (1960) reported that subclinical mastitis was associated with a drop of 10% milk yield, 11% in non fatty solids and 12% of butter fat in an infected herd.

Although bacteria has been incriminated as the predominant cause of mastitis, yet udder infection due to fungi has been reported by several authors (LOFTSGARD and LINDGVIST, 1960; KIELWEIN, 1976; ABD-EL-HALIM, 1979 and ABOU-EL-FOTOUH, 1986).

The aim of this study was thus to clarify the role of fungi as a cause of subclinical mastitis in bovine udder as well as their sensitivity to some antimycotic drugs.

MATERIAL and METHODS

A total of 180 milk samples were collected aseptically from apparently healthy udders of cows.

Schalm test for detection of subclinical mastitis was carried out according to SCHALM *et al.* (1971).

Isolation and identification of fungi were carried out according to the methods described by REFAI *et al.* (1969). Loopfulls of the milk sediment (after centrifugation at 3000 rpm for 15 minutes) were plated on Sabouroud dextrose agar media (CRUICK-SHANK *et al.*, 1975). Plates were incubated at 37°C for 7 days and examined daily for 7 days for the evidence of growth. Suspected growth was subjected to the following:

- a- The morphological characters on rice agar plates.
- b- The biochemical reactions of sugar fermentation and assimilation tests using glucose, maltose, sucrose, lactose and galactose as well as nitrate assimilation and urea hydrolysis tests.

Pathogenicity test was carried out in rabbits according to HUPPERT *et al.* (1963). One ml. saline suspension of 24 hours yeast culture containing approximately 4×10^8 living microorganisms (as estimated by opacity tubes) was inoculated I/V in two rabbits. Yeasts were reisolated from heart blood, spleen, Kidneys and liver of freshly died rabbits.

Sensitivity test against Nystatin (100.000 I.U/ml suspension) and Clotrimazol (1.0% solution) was carried out by using the agar plate diffusion technique according to MERCHANT and PACKER (1969).

RESULTS

Results are shown in tables 1 and 2.

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Table (1): Incidence of subclinical mastitis

No. of examined milk samples	Schalm test		Mycological examination	
	No. of +ve	%	No. of +ve	%
180	30	16.6	2	1.1

Table (2): Identification of isolated yeasts

isolate No	Sugar Fermentation					Sugar assimilation					Nitrate assimilation	Urea hydrolysis	Isolate	
	Gl	Gal	Suc	Mal	Lac	Gl	Gal	Suc	Mal	Lac				
1	+	+	-	+	-	+	+	+	+	-	-	-	-	C.al
2	+	+	-	+	-	+	+	+	+	-	-	-	-	C.al

+ = Positive. - = Negative. Gl = Glucose. Gal. = Galactose. Suc = Sucrose
Mal = Maltose. Lac = Lactose. C.al = Candida albicans.

DISCUSSION

Examination of 180 milk samples collected from apparently healthy udders of cows for subclinical mastitis revealed that 16.6% (30) of the samples were positive for Schalm test. the incidence of subclinical mastitis in cows was recorded as 65.43% (ABD-EL-KARIM and EL-ASHMAWY, 1979) and 7.9% (TAWFIK *et al.*, 1984). The variation between the incidence of subclinical mastitis in this study and other authors can be attributed to several factors including the rate of exposure of animals to infection and the hygienic conditions.

In this study, mycological examination of the 180 milk samples yielded 2(1.1%) isolates which were identified as Candida albicans. The incidence of mycotic sub-clinical mastitis in cows was recorded as 6.13% (SHARMA *et al.*, 1977) and 20% (ABD-EL-HALIM, 1979).

Candida albicans has been previously isolated from healthy udders of cows by ABD-EL-HALIM (1979) as well as from clinically affected udders by ABOU-EL-FOTOUH (1986). These findings and those obtained in the present study indicate that apparently healthy udders may harbour pathogenic yeasts, the matter which has a great epizootiological and epidemiological importance as it may cause severe harm for milk consumers.

The two Candida albicans isolates were proved to be pathogenic for rabbits. Two rabbits were used for each isolate. All rabbits were died within 2-4 days post-inoculation. Candida albicans were reisolated from spleen, liver and Kidneys of all dead rabbits.

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In vitro sensitivity of Candida albicans against Nystatin and Clotrimazol for the aim of treatment of infected cases, proved great sensitivity of the two isolates to both drugs. This agrees with the result obtained by AMIN and MESSIEHA (1977), who reported great sensitivity of Candida albicans to Nystatin. These results indicate the importance of Nystatin and Clotrimazol in treatment of mastitis caused by Candida albicans.

In conclusion, during the control of mastitis, the application of strict hygienic measures during and after milking lead to economical benefits for farmers either by increasing the milk yield or lowering the rate of mastitis, cost of treatment of diseased udders and subsequently safeguard consumers specially infants against infection caused by yeast and yeast-like fungi.

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