Contents

LIST OF TABLES iii

LIST OF FIGURES iiii

Abstract iv

CHAPTER I 1

Introduction 1

CHAPTER II 3

Materials and Methods 3

2.1. Study populationand sample collection 3

2.2. Collection of data by questionnaire 3

2.3. Experimental design 4

2.4. Determination of subclinical mastitis 4

2.5. Bacteriological investigation 6

2.5.1. Isolation and identification of *Staphylococcus spp* 7

2.5.2. Isolation and identification of *E.coli spp* 7

2.6. Antibiotic sensitivity test 7

2.7. Statistical analysis 9

CHAPTER III 10

Results 10

CHAPTER IV 14

Discussion 14

CHAPTER V 16

Conclusion 16

CHAPTER VI 17

Limitation……...17

CHAPTER VII……...…18

References…….……..……..18

Acknowledgement……..…23

Appendix……..24

Brief biography of the student…….…….25

LIST OF TABLES

Table 1: Judgement of the quality of milk and the state of mastitis 5

Table 2: Diffusion zone break point 8

Table 3: Demography of mastitis of affected farms and cows of the study area.....11

Table 4: Antibiotic sensitivity test for *Staphylococcus spp*……12

Table 5: Antibiotic sensitivity test for *E.coli*……..12

LIST OF FIGURES

Figure 1: Geographical location of sample collection site Chittagong Metropolitan area 3

Figure 2: (a) California mastitis test for milk samples..... 5

(b) Working at clinical pathology pathology lab.....5

Figure 3: Growth of *Staphylococcus spp* on Mannitol salt agar..6

Figure 4: (a) Growth of *E.coli* on McConkey agar..... 7

(b) Growth of *E.coli* on EMB agar.....7

Figure 5: Bacterial zone of inhibition area 8

Abstract

Sub-clinical mastitis is one of the major causes of economic loss in dairy industry of Bangladesh. The condition remains unrecognized clinically and therefore requires regular screening. Several cow-side tests have been used for screening in Bangladesh including California mastitis test (CMT), white side test etc. Antibiotics are widely used in mastitis affected cows (both for clinical and sub-clinical mastitis) in Bangladesh nonspecifically and without conducting a sensitivity test majorly. The trend of use of antibiotics could simply lead to development of antibiotic resistance in causative microorganism. Therefore, we conducted a cross sectional study to estimate the prevalence of sub-clinical mastitis in cows of Chittagong Metropolitan Area (CMA) and to evaluate the antibiogram status of *Escherichia coli* and *Staphylococcus* isolated from samples collected from affected animals. The study was undertaken on 50 lactating cows from 5 dairy farms during January to August 2018. California Mastitis Test (CMT) was used to diagnose subclinical mastitis. When milk sample from at least one quarter of a cow showed slight thickening to gel form like a fried egg (CMT score 2 or more), the cow was considered as positive. Milk samples of all subclinical mastitic cows (n=25, proportionate prevalence 50%) were subjected to bacteriological culture for isolation and identification of *Staphylococcus* spp. and *Escherichia coli*. The overall prevalence of *Staphylococcus* spp. and *E. coli* in milk samples were 32% (n=8) and 32% (n=8), respectively. We used 6 antibiotics commonly administered in mastitis affected cows to evaluate the antibiotic resistance status of *E. coli* and *Staphylococcus*. Both microorganisms showed 100% resistance to Amoxycilin, Azithromycin and Methicilin. Both microorganisms were moderately resistant (87%) to Pefloxacin and Streptomycin. Six out of 8 positive *Staphylococcus* isolates were found sensitive (75%) to Gentamycin. It can be concluded from the study that the overall proportionate prevalence of SCM is high in CMA and the commonly used antibiotics became resistant to the prime causative organisms that might lead the treatment to be non responsive. Both findings might cause huge economic loss to the farmers of CMA and seeks proper strategies to overcome.

Keywords: Sub-clinical mastitis, CMT, Dairy cow, Antibiotic resistance