Supta et al. Annals of Veterinary and Animal Science 2019
http://naturepub.org/navas
[Received: 09 Nov 18, Accepted: 23 Oct 19, Published: 30 Oct 19]

eISSN: 2313-5514
pISSN: 2312-9123
DOI:10.26609/avas.651

AVAS
Annals of Veterinary and Animal Science

RESEARCH ARTICLE V:6(5) OPEN ACCESS

# Prevalence of cutaneous myiasis along with secondary bacterial complications in ruminants

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## ABSTRACT

Myiasis is a common and widespread clinical problem closely interlinked with serious economic losses of livestock in Bangladesh, though it is thought to be a neglected cutaneous infection. The study was carried out to determine the clinical prevalence of myiasis in cattle, sheep and goat based on different epidemiological parameters such as species, sex, age and season with special emphasis to identify the secondary bacterial complications in maggot wounded areas. The swabs were randomly collected from the myiatic wounds, brought to Microbiological laboratory with necessary cautions followed by bacteriological cultivation, isolation, and identification. The data were recorded and organized systematically and analyzed statistically. A total number of 4149 clinical cases were recorded, where 312 cases were registered as myiasis irrespective of species. The overall prevalence of myiasis was found at 7.52%. Higher prevalence of myiasis were noticed in cattle (11.67%) (n=187) followed by goat (5.01%) (n=122) and sheep (2.68%) (n=3) that differed significantly ($P<0.05$). Myiasis showed higher in female animals (22.39%) than in males (14.92%), and young animals (52.41%) were predominantly susceptible than adults (6.42%) in cattle and goats whereas the opposite scenario was seen in sheep. Seasonally the highest clinical cases were found in summer (42.62%) followed by rainy (15.00%) and winter season (2.92%) which demonstrated statistically significant ($P<0.05$) in cattle and goat but insignificant ($P>0.05$) in case of sheep. In myiatic wound, the bacterial complications were higher with *Staphylococcal spp* infection (72.22%) followed by *Escherichia coli* (11.11%). Combined infection of *E. coli* and *Klebsiella spp.* was 11.11%, whereas single *Klebsiella* infection was 5.56%.

**Key Words:** Bacteria, myiasis, prevalence, ruminants.

## INTRODUCTION

Myiasis in domestic animals is a worldwide problem including Bangladesh causing serious economic losses in livestock through reduced productivity (milk, meat, wool) and tissue damage (poor quality hide). It impairs livestock production not only by inducing mechanical damage to internal organs and skin but also by downregulating the immune system of the host (Boulard, 2002).

Myiasis is the invasion of tissues or organs of live vertebrates (humans and/or animals) with dipterous larvae, which feed on host's dead or living tissues, liquid body substances or ingested foods (Zumpt, 1965). The most frequent host for myiasis is cattle (46.4%) followed by dogs (15.3%), humans (14.7%), pigs (6%), horses (4%) and sheep (1%) (Sergio et al., 2007). Wounds, ulcers, sores, broken horns, injured eyes, and disrupted skins are the commonest predisposing factors of myiasis in domestic animals (Juyena et al., 2013). The female fly lays eggs on new wounds followed by the hatching of larvae that creep, feed, and live in the tissue (Hamid, 2016). Oviposition is encouraged by a foul-smelling and purulent discharge from diseased tissue. The exact chemosensory causing attraction for oviposition is unknown, but the presence of pus and bacterial metabolites in the wounds are known to increase the attractiveness of wounds as oviposition sites (Humphery et al., 1980).

The severity of the disease is often become fatal due to secondary bacterial complication followed by bacteremia, septicemia or toxemia (Guerrini et al., 1988; Schnur et al., 2009). Among gram-positive aerobes, *Staphylococcus aureus, Staphylococcus albus*, and *Streoptococcus pyogenes* were more frequently isolated from myiatic wounds. Gram-negative aerobes included *Proteus spp.* and *Escherichia coli.* (Malaviya, 2005; Juyena et al., 2013). Therefore, the present research

work was undertaken to clinically observe the prevalence of myiasis in livestock species along with the isolation of invading secondary bacteria from the affected myiatic wounds.

## MATERIALS AND METHODS

The study was conducted for a year ranging from May 2017 to April 2018. A total of 4149 clinical cases were recorded among which only 312 myiasis affected animals (cattle, goat, and sheep) were registered during the experimentation.

The visible clinical manifestations of the affected animals were noted systematically and clinical cases were recorded during the physical visit of the farms and the farmer's complaints were also emphasized. The epidemiological data were recorded based on species of animals affected, sex, age and season, and groupings were done based on the factors as stated above (Table 1).

**Table 1:** Overall prevalence of myiasis in ruminants

| Total clinical cases | Myiasis affected cases | Prevalence (%) |
|---|---|---|
| **4,149** | 312 | 7.52 |

**Table 2:** Species-wise prevalence of myiasis in ruminant animals

| Species | Total No. of Clinical cases | Myiasis affected cases | Prevalence (%) | P-value |
|---|---|---|---|---|
| **Cattle** | 1602 | 187 | 11.67 | 0.00 (**) |
| **Goat** | 2435 | 122 | 5.01 | |
| **Sheep** | 112 | 3 | 2.68 | |

* means 5% level of significant ($p < 0.05$)
** means 1% level of significant ($p < 0.01$)
NS means non-significant ($p > 0.05$)

**Table 3:** Frequency distribution of myiasis according to species in ruminants

| Species | Population affected with myiasis | No. of individuals affected with myiasis | Percentage (%) |
|---|---|---|---|
| **Cattle** | (n=312) | 187 | 59.94 |
| **Goat** | | 122 | 39.10 |
| **Sheep** | | 03 | 0.96 |

**Table 4:** Sex-wise prevalence of myiasis in ruminants

| Species | Male | | | Female | | | P- value |
|---|---|---|---|---|---|---|---|
| | Total No. of cases | Affected with myiasis | Prevalence % | Total No. of cases | Affected with myiasis | Prevalence % | |
| **Cattle** | 572 | 53 | 9.27 | 1030 | 134 | 13.00 | 0.02(*) |
| **Goat** | 1136 | 40 | 3.52 | 1299 | 82 | 6.31 | 0.00 (**) |
| **Sheep** | 47 | 1 | 2.13 | 65 | 2 | 3.08 | 0.76( NS) |

**Table 5:** Frequency distribution of myiasis according to Sex in ruminants

| Sex of animal | Cattle | | Goat | | Sheep | |
|---|---|---|---|---|---|---|
| | Total affected | Percentage (%) | Total affected | Percentage (%) | Total affected | Percentage (%) |
| **Male** | 53 | 28.34 | 40 | 32.79 | 1 | 33.33 |
| **Female** | 134 | 71.66 | 82 | 67.21 | 2 | 66.67 |

### Microbiological study

The affected animals were randomly selected (at least 3 in each species) to collect swabs, swabs were brought to bacteriology laboratory (Department of Microbiology,

Hajee Mohammad Danesh Science and Technology University, Dinajpur) with necessary cautions, attempted to cultivate organisms in solid and liquid media, isolation and identification were done based on the classical growth, staining and morphological properties of the bacteria as per standard procedures (Merchant and Packer 1967; Cheesbrough, 1985)

### Statistical analysis

The clinical data were noted and organized systematically and analyzed statistically by using software 'SPSS' (version 17) following chi-square ($\chi^2$) test

## RESULTS AND DISCUSSION

A total number of 312 myiasis affected cases were identified in cattle, goat, and sheep from 4,149 different clinical cases at Sadar Upazila of Dinajpur district for a period of one year. In this study, the overall prevalence was 7.52% (Table 1) which is comparable to Samaddar et al. (2016) and Imtiaz et al. (2014) who reported 10.97% out of 5987 in Coastal region of Bangladesh, 5.21% out of 4338 in Chittagong, Bangladesh respectively. Sarker et al. (2016), Juli et al. ( 2015), Giangaspero et al. (2011), Alahmed (2004) who reported the overall

**Table 6:** Frequency distribution of myiasis according to age in cattle

| Age of cattle | Affected with myiasis | Percentage (%) | P value |
|---|---|---|---|
| **Group-1 (0-1 year)** | 98 | 52.41 | 0.00 (**) |
| **Group-2 (>1to 2years)** | 36 | 19.25 | |
| **Group-3 (>2 to 4 years)** | 41 | 21.93 | |
| **Group-4 (>4 years)** | 12 | 6.42 | |

**Table 7:** Frequency distribution of myiasis according to age in sheep and goat

| Age | Goat | | Sheep | |
|---|---|---|---|---|
| | Affected with myiasis | Percentage (%) | Affected with myiasis | Percentage (%) |
| **Group-1 (0-6 months)** | 22 | 18.03 | 1 | 33.33 |
| **Group-2 (>6 to 12 months)** | 25 | 20.49 | - | - |
| **Group-3 (>12 to 24 months)** | 33 | 27.05 | 2 | 66.67 |
| **Group-4 (>24 months)** | 42 | 34.43 | - | - |
| **Total** | 122 | 100 | 3 | 100 |
| **P-value** | 0.01 (*) | | 0.41 (NS) | |

**Table 8:** Season-wise prevalence of myiasis in ruminants

| Species | Summer Season n=1208 | | | Rainy Season n=1444 | | | Winter Season n=1497 | | | P-value |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. of cases | Affected with myiasis | Prevalence % | No of cases | Affected with myiasis | Prevalence % | Total no of cases | Affected with myiasis | Prevalence % | |
| **Cattle** | 503 | 120 | 23.86 | 498 | 55 | 11.04 | 601 | 12 | 2.00 | 0.00 (**) |
| **Goat** | 662 | 78 | 11.78 | 908 | 36 | 3.96 | 865 | 8 | 0.92 | 0.00 (**) |
| **Sheep** | 43 | 3 | 6.98 | 38 | - | - | 31 | - | - | 0.08 ( NS) |

prevalence of myiasis was 4.09% at Chittagong, 4.11% at Dinajpur of Bangladesh, 3% in Italy, 2% in Riyadh respectively. The higher prevalence rate than the present study was reported that are 13.4% in Bathans of Pabna and Sirajgonj districts (Sarker et al., 2013), 14.71% in southeastern part of Iran (Radfar and Haji Mohammad, 2012), 13.1% in South Iran (Shoorijeh et al., 2011), 59.9% in Ethiopia (Gebremedhin, 2011), 40.3% in north-eastern part of Turkey (Arslan et al., 2008), 31.9% in Turkey (Kara et al., 2005), 24% in northern Jordan (Abo-Shehada et al., 2003) and 35.68% cases in northern Mediterranean region of France (Dorchies et al., 2000).

**Table 9:** Frequency distribution of myiasis according to season

| Seasons | Cattle | | Goat | | Sheep | |
|---|---|---|---|---|---|---|
| | No. of affected animal | Percentage ( %) | No. of affected animal | Percentage (%) | No. of affected animal | Percentage (%) |
| **Summer season** | 120 | 64.17 | 78 | 63.93 | 3.0 | 100 |
| **Rainy Season** | 55 | 29.41 | 36 | 29.51 | 0. | 0.0 |
| **Winter season** | 12 | 6.42 | 8 | 6.56 | 0.0 | 0.0 |
| **Total** | 187 | 100 | 122 | 100 | 3 | 100 |

**Table 10:** Percentage of isolated bacteria from myiasis affected wounds

| List of organisms | Total No. of organisms | Percentage (%) |
|---|---|---|
| ***Staphylococcus* spp.** | 13 | 72.22 |
| ***Escherichia coli*** | 2 | 11.11 |
| ***Klebsiella* spp.** | 1 | 5.56 |
| ***Escherichia coli* + *Klebsiella* spp.** | 2 | 11.11 |
| **Total** | 18 | 100 |

**Species wise prevalence of myiasis**

During the study, the prevalence of myiasis in cattle was 11.67%, goat 5.01% and sheep 2.68% which was highly significant (Table: 2). The findings are more or less similar to Samaddar et al., (2016) who stated cattle 6.16%, goat 5.42%, and sheep 0.016%. Yadav et al., (2013) found the prevalence rate of myiasis 9.73% out of 750 cattle in the Jammu region, India.

Among the three species, the occurrence of myiasis in cattle was 59.94%, goat 39.10% and sheep 0.96% which is shown in Table: 3. Juyena et al. (2013) and Sergio et al., (2007) stated that cattle as the most frequent hosts for myiasis and their results are correlated with the result of the present study. The prevalence of myiasis in cattle was 3.56–10.23% in Turkey (Gulanber et al., 2000), 8% in Canada (Colwell, 2000) which is similar to our study. This result is in contrast with the reports of Imtiaz et al., (2014) who investigated that the highest occurrence was found in goat than other animals. The prevalence of myiasis in cattle was 1.67% and goat 2.42% in Chittagong and Cox'S Bazaar district of Bangladesh (Sarker et al., 2016) which is also dissimilar to our study. The higher prevalence rate than the present study was reported in cattle 23.80% in Manikgonj (Rahman et al., 2013), 24.7% in Babugonj, Barisal (Rahman et al., 2012), 35.50% in Chakwal, Punjab, Pakistan (Hasan et al., 2008), 85% in Italy (Frangipane et al. 2003), and 80% in China (Yin et al. 2003) those are comparable to our result.

**Sex- wise prevalence of myiasis**

The study showed that female animals were significantly ($p \leq 0.05$) higher infested with myiasis than males. Among three species (cattle, goat, sheep) prevalence of myiasis in female animals (Overall= 22.39%) were 13.00%, 6.31% and 3.08% where male animal (Overall 14.92%) were 9.27%, 3.52% and 2.13%, respectively (Table: 4).There was an insignificant sex-wise variation found in sheep.

The frequency of myiasis in female animals in cattle (71.66%) and in goat (67.21%) were higher than males (28.34%; 32.79%), respectively (Table: 5). These findings have a similarity with Imtiaz et al., (2014) and Juyena et al., (2013) who reported that the infestation of myiasis was higher in females (64.5% and 66%) than male (35.5% and 34%). Samaddar et al., (2016), Alejandro et al., (2015) and (Radfar and Haji Mohammadi, 2012) also reported that the affection rate of myiasis is higher in female than male. These results support the earlier investigations of Sarker et al., 2014 (11.6% in male and 14.0% in female) in the case of cattle. Ozdal et al., (2016) and Osman et al., (2017) said that the infestation rates were 41.26 % and 13.9% in female and 34.42 % and 2.2% in male respectively. The findings of Sarker et al., (2016), Islam et al., (2015) and Rahman et al., (2009) were similar to

**Table 11: Cultural and Morphological Characteristics of Isolated Bacteria**

| Name of bacteria | Culture in media | Cultural Characteristics | Staining and Morphological Characteristics |
|---|---|---|---|
| ***Staphylococcus* spp.** | Nutrient agar | Grayish white to yellowish colonies | Gram positive cocci, violet color arranged in grape like cluster |
| | MacConkey Agar | Pale color / colorless colonies | |
| | Mannitol salt agar | Golden yellow color colonies | |
| ***Escherichia coli*** | Nutrient agar | Gray white colonies | Gram negative, pink color large rod shape appearance, arranged in single or paired |
| | MacConkey Agar | Lactose positive, Rose pink colour colonies | |
| | Eosin Methylene Blue (EMB) agar | Smooth, circular, small green colonies with dark center and metallic sheen | |
| ***Klebsiella* spp.** | Nutrient agar | Grayish colonies | Gram negative, pink color, small rod shaped organism |
| | MacConkey Agar | Mucoid, convex, lactose positive, pink color colonies | |
| | Eosin Methylene Blue (EMB) agar | Large, mucoid, pink to purple colour colonies without metalic | |

**Table 12:** Identification of Isolated Bacteria by Biochemical Tests

| Name of bacteria | Indole test | | MR test | | VP test | | Catalase test | |
|---|---|---|---|---|---|---|---|---|
| | Change | Result | Change | Result | Change | Result | Change | Result |
| ***Staphylococcus* spp.** | No color change | -(ve) | Red color | +(ve) | Red color | +(ve) | Bubble formation | +(ve) |
| ***Escherichia coli*** | Pink color ring at the top of the media | +(ve) | Red color | +(ve) | No color change | -(ve) | Bubble formation | +(ve) |
| ***Klebsiella* spp.** | No color change | -(ve) | No color change | -(ve) | Red color | +(ve) | Bubble formation | +(ve) |

these findings. Saleem et al., (2017) and Hasan et al., (2008) stated that the prevalence was higher in males (100 %; 39.50%) compared to females (98.2%; 31.50%) animals respectively which is a contrast to this findings. *Negm-Eldin* et al., (2015); Mot (2013); Orfanou et al. (2011), Abd El– Rahman (2010); Kara et al. (2005) reported more cases in male than the female which is also dissimilar to this study. Oryan et al. (2012), Shoorijeh et al. (2011), Tavassoli et al. (2010) and Abo– Shehada et al. (2003) found the same type of infection rate in both sexes which is a contrast to our findings.

**Clinical Findings**

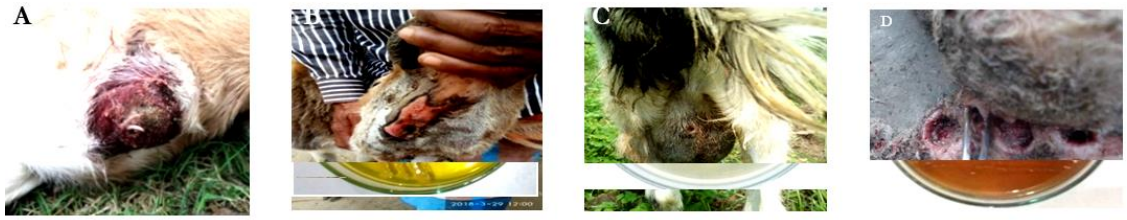


Fig. 1: A. Myiasis in naval region, B. head region of cattle, C. scrotal region of buck D. Inguinal region of calf

**Cultural and morphological characteristics of *Staphylococcus Spp.***

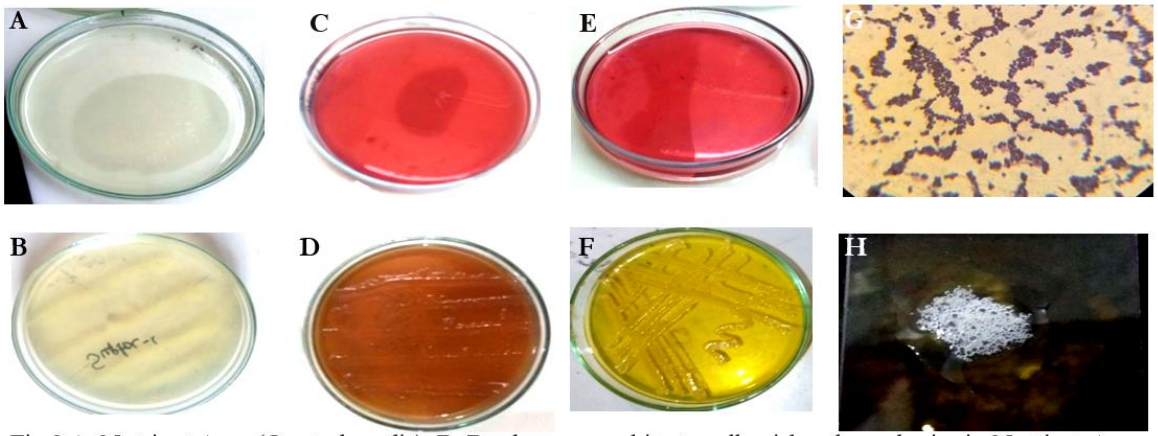


Fig 2:A. Nutrient Agar (Control media), B. Produce gray white to yellowish color colonies in Nutrient Agar media, C. MacConkey agar (control media), D. Pale color colonies of Staphylococcus spp in MacConkey agar, E. Mannitol Salt Agar (control media) F. Golden yellowish color colonies in MSA, G. Morphological characteristics of Staphylococcus Spp. showing violet color cocci, arranged in grape like cluster in gram staining method. H. Catalase positive.

**Age-wise prevalence of myiasis**

The infection rate was significantly higher in cattle less than one year of age (0-1year) 52.41% than the older age group (>4 years) (Table: 6) which is close to Juyena et al., (2013) stating the occurrence of myiasis was higher (41%) in animals of less than 6 months of age. Juli et al., (2015) and Hasan et al., (2008) stated that the occurrence of myiasis was higher in young animals than the adult animals which is similar to our study. Kara et al. (2005) said the intensity of the infestation decreased with the age of cattle which is parallel to the present study. This result is in contrast with the reports of Islam et al. (2015) and Rahman et al. (2009) who investigated that the highest occurrence 44% and 40% was found in the adult animals of over 2 years and the lowest 25% and 27% in the calves of below 6 months respectively. Yadav et al., (2013) found that the highest (13.57%) prevalence occurred in 1-4 years of age and lowest (0.68%) is below

1 year of age groups of the animal which is dissimilar to our study. Dehghani et al. (2012) reported that the prevalence of myiasis was higher in the old age group than young which not supported by this study. An infestation of myiasis in sheep due to

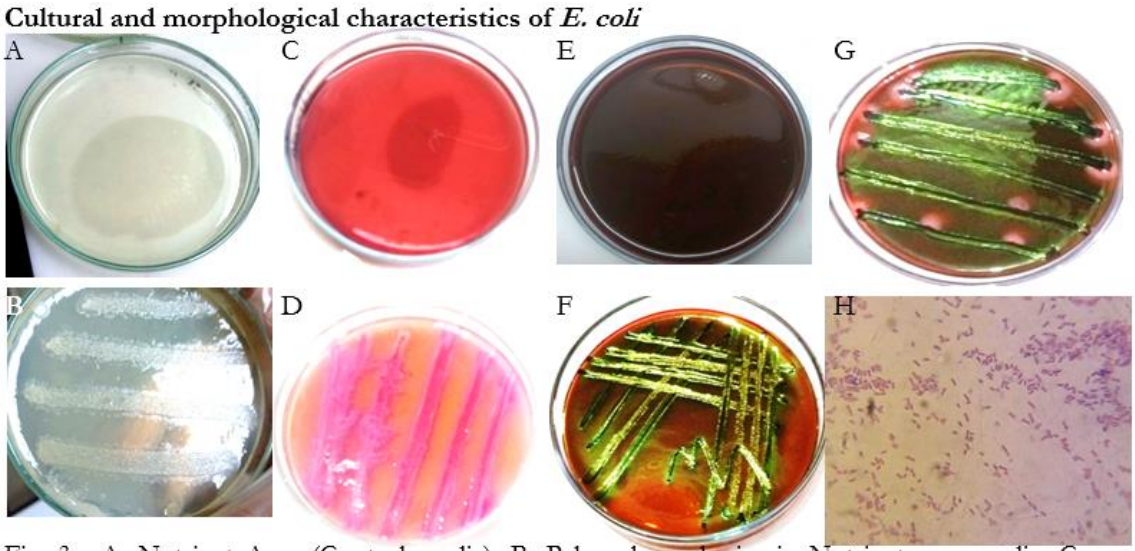


Fig. 3: A. Nutrient Agar (Control media), B. Pale color colonies in Nutrient agar media, C. MacConkey agar (control media), D. Rose pink colour colonies in MacConkey agar, E. EMB agar (control media), F. Green metallic sheen in EMB agar, G. Green metallic sheen with pink color colonies in *E. coli*+ *Klebsiella* spp. in EMB agar H. Microscopic morphology of *Escherichia coli* showing pink color large rod shaped bacteria

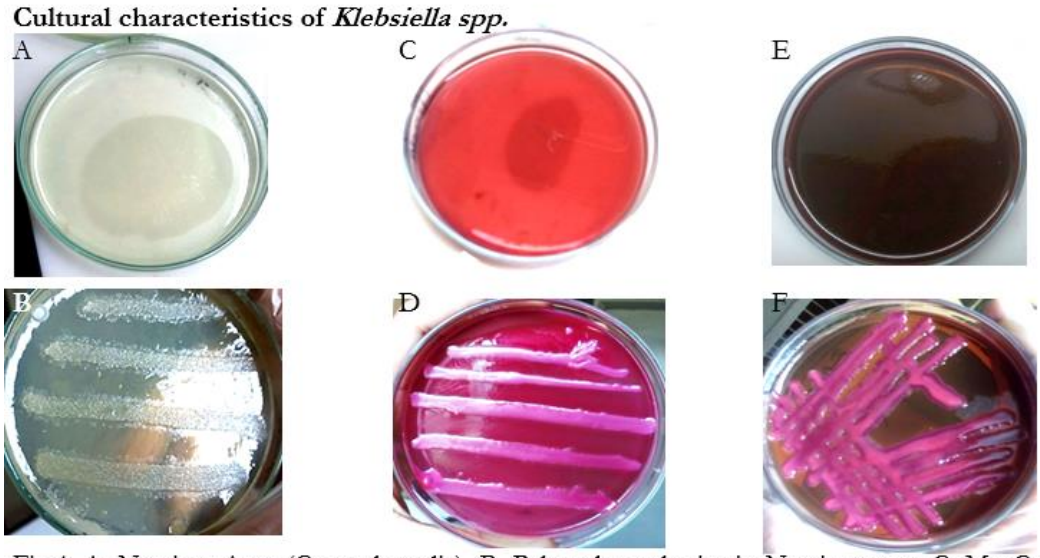


Fig.4: A. Nutrient Agar (Control media), B. Pale color colonies in Nutrient agar, C. MacConkey agar (control media), D. Mucoid, convex, pink color colonies in MacConkey agar, E. EMB agar (control media), F. Large, mucoid, pink to purple colour colonies in EMB agar

age appeared insignificant (P>0.05).

The study indicates that the highest infection was found in over 24 months (34.43%) and the lowest infection in young animals bellow 6 months (18.03%) in case goat (Table: 7) which is comparable to Arslan et al. (2008) stating that the infestation rate up to 1-years-old was 30.0%, 1 to 3 years-old 40.0% and older than 3 years old was 52.4% in small ruminants. Shoorijeh et al. (2011) stated that infestation rates were significantly higher in 4-5-year-

old goats (16.2%) than 6 months to 2-year-old (7.4%) groups. *Negm-Eldin* et al. (2015) and Tavassoli et al. (2010) said that the prevalence was significantly higher in sheep and goat of 25-36 months old than bellow 6 months of age which is close to our present study. This finding was consistent with that was recorded by Abo-Shehada et al. (2000), Uslu and Dik (2008) who reported higher infestation rates above 3 years. In goat, Many authors reported a significantly higher infestation rate in young than adult (Yilma and Genet, 2000; Scala et al., 2001; Alem et al., 2010; Karatepe et al., 2014) which is a contrast to this result. Saleem et al. (2017) reported that all age groups of animals were equally susceptible to infestations.

**Season- wise prevalence of myiasis**

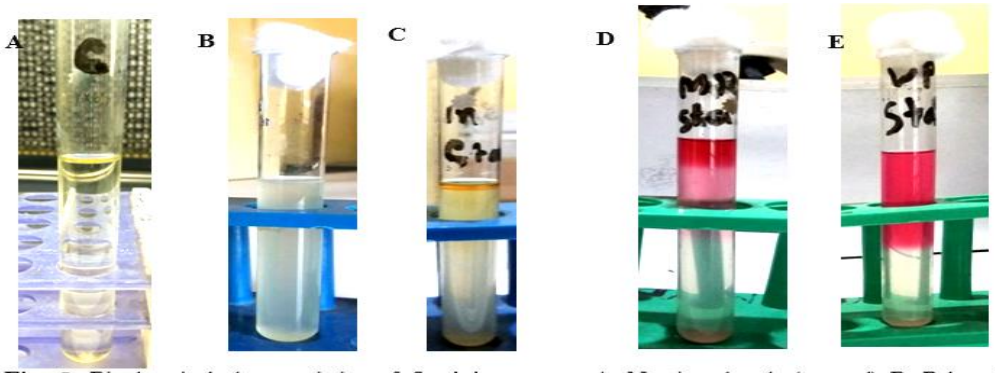


**Fig. 5:** Biochemical characteristics of *Staphylococcus* spp. A. Nutrient broth (control) B. Pale color colonies in Nutrient broth C. Indole (- ve), D. MR (+ve), E. VP (+)

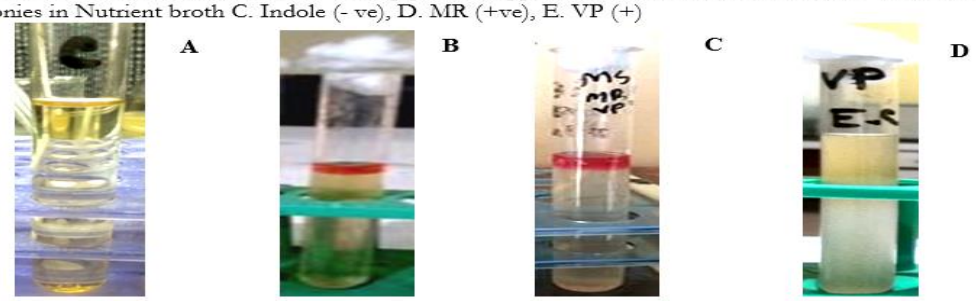


**Fig. 6:** Biochemical characteristics of *E. Coli*. A. Control B. Indole (+ve), C. MR (+ve), D. VP (-ve)

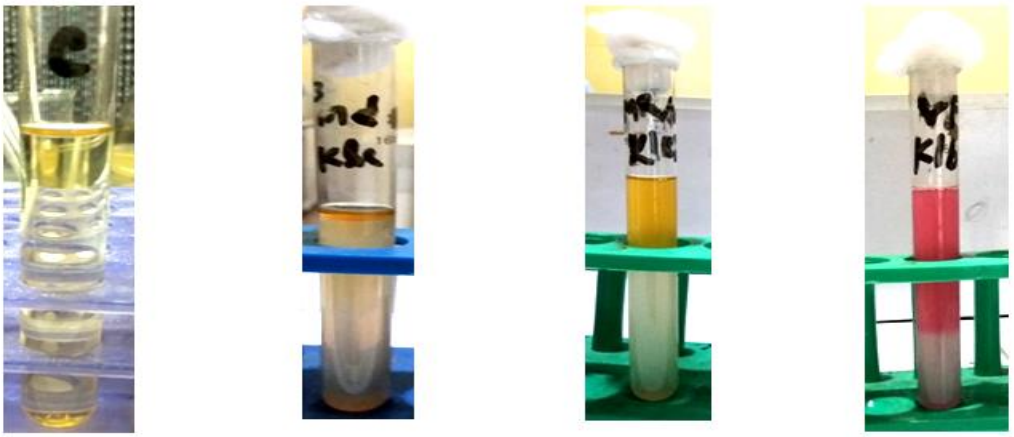

**Fig. 7:** Biochemical characteristics of *Klebsiella* spp. A. Control Media B. Indole (- ve), C. Control Media, D. MR (-ve), E. VP (+)

The study showed that the highest prevalence of myiasis in cattle, goat and sheep were found in summer season (overall, 42.62%); (23.86%, 11.78% and 6.98%) which was followed by rainy season (overall, 15%); (11.04%, 3.96%, 0%) and

winter season (overall, 2.92%); (2.00% & 0.92%, 0%) respectively (Table: 8). There was insignificant variation found in sheep in occurrences of myiasis according to season. Occurrence of myiasis in cattle and goat were 64.17% & 63.93% in summer season, 29.41% & 29.51% in rainy season, 6.42% & 6.56% in winter season, respectively were recorded (Table: 9). Rahman et al., (2012) and Silva et al., (2012) recorded the highest myiasis cases in cattle and goats during the summer season in comparison to the winter season which closes to this result. Juli et al., (2015) and Sarker et al. (2014) investigated the higher rate of myiasis in summer than winter and moderate in the rainy season. These findings are inconsistent with that of Juyena et al. (2013) and they stated higher incidences of myiasis during March-June (summer season) 80% followed by July-October (rainy season) 13% and November-February (winter season) 7%. Alahmed, (2004) found a higher incidence of myiasis during March-May (60%) due to optimum temperature and relative humidity. He also reported lower infestation during the dry hot season (June-August, 5%) and cold season (December-February, 1.5%) and his results more or less similarly correlated with the present study. Ipek, (2017) observed seasonal prevalence in goats varied between 44.18% and 100%, with the highest prevalence being in the winter and the lowest prevalence in the autumn which is not parallel to this result. Osman et al. (2017), Bosly (2013) and Abd El-Rahman (2010) stated the rate of infestation was significantly greater in the colder months compared to those of warmer months. Hasan et al. (2008) said, bovine myiasis was found only from September to December. In contrast, winter peak larval infestations were observed by Alcaide et al. (2003) and Shoorijeh et al. (2009).

**Isolation and identification of bacteria**

During this study, the highest prevalence of *Staphylococcus* spp. 72.22% was seen followed by *E. coli* 11.11%, combined infection by *E. coli* + *Klebsiella spp.* 11.11% and single *Klebsiella* spp. infection 5.56% (Table: 10). The cultural, morphological and biochemical characteristics of *Staphylococcus spp (*Fig.: 2 & Fig: 5), *E.coli* (Fig.: 3 & Fig.: 6) and *Klebsiella spp* (Fig.: 4 & Fig.: 7) are listed in Table: 11 & Table: 12. Islam et al. (2015) and Gunalan et al. (2011) reported that myiasis wounds are associated with *Staphylococcus* spp. Mot, (2013) detected bacteria from maggot wound samples where: *Staphylococcus aureus, Bacillus subtilis, Proteus vulgaris, Micrococcus luteus* and *Escherichia coli* were isolated which close to the present findings. El-Nouby et al. (2009) identified the following pathogenic bacteria species from myiatic wounds: coagulase-negative *Staphylococci*, including methicillin-resistant *Staphylococcus aureus* (MRSA), *Bacteroides, Proteus, Pseudomonas* and *Klebsiella* spp. Malaviya, (2005) reported that the bacterial flora seen in maggot-infested wounds of the extremities. Among gram-positive aerobes, *Staphylococcus aureus, Staphylococcus albus*, and *Streoptococcus pyogenes* were more frequently isolated and gram-negative aerobes included *Proteus spp.* and *Escherichia coli.* Anaerobes which were isolated include *Micrococcus* and *Bacteroids* whereas Clostridia were seen infrequently (2% cases).

## CONCLUSION

Myiasis is the most familiar problem in veterinary practice. A cross-sectional study was carried out to investigate the prevalence of myiasis in domestic animals according to species, age, sex and season. Samples were collected for isolation and identification of major pathogenic bacteria from maggot affected wounds. The overall prevalence of myiasis was 7.52% in livestock animals (cattle, goat, and sheep). Cattle are the most susceptible species for myiasis (11.67%) than the goat (5.10%) and sheep (2.68%) in this region. Sex, age and season influenced the prevalence of myiasis in domestic animals. The major pathogens isolated from maggot wounds were *Staphylococcus* spp.

, *Escherichia coli*, and *Klebsiella* spp. which increases the attractiveness of Diptera flies. These findings could create awareness in animal rearers by generating the basic data which may help to prevent maggot infestation and control the spread of myiasis

## ACKNOWLEDGEMENT

The authors are highly grateful to the Veterinary Surgeon, Upazila Livestock Office, Sadar, Dinajpur, Bangladesh for assisting physical visit, data collection, necessary suggestions; Department of Microbiology, Hajee Mohammad Danesh Science and Technology University, Dinajpur, Bangladesh for cordial cooperation during bacteriological analysis; and Ministry of Science and Technology, Bangladesh for funding in this research work.

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