STUDIES ON COMMANSAL MICRO—ORGANISMS 
INHABITING BOVINE SKIN 
IN SHARKIA GOVERNORATE 

By

M.A. MARZOUK, * I.E. MOWAFI, ** and A.H. ZAKARIA ***

SUMMARY

Skin of 120 dairy animals were investigated microbiologically. The udder skin was found to be contaminated with Staphylococcus aureus, haemolytic streptococci, Streptococcus faecalis, E. coli, Proteus sp. & Klebsella sp., the isolated fungi were Aspergillus sp., Candida sp. and Penicillus sp.

Skin of the abdominal regions were shown to be contaminated with Staphylococcus aureus, Streptococcus faecalis, E. coli, Proteus sp., and Klebsella sp., the isolated moulds were Aspergillus sp., Penicillium sp. and Mucor sp.

On the skin around the mouth the contaminants were Streptococcus faecalis, E. coli and Proteus sp. as well as Penicillus sp. and candida sp.

INTRODUCTION

Up till now little attention is given to the microflora and pathogenic organisms that contaminate the animals skin. Studying these organisms will throw interesting light on the interactions of the different micro-organisms present, and the host animal in relation to them. Cullen & Herbert (1967) studied the bovine skin, teat canal and milk and isolated 12 strains of which non haemolytic staphylococci, aesculinsplitting streptococci, staph. aureus, strept. uberis, a haemolytic streptococci, E. coli and proteus sp. Zakaria et al. (1978) isolated streptococcus agalactiae from the under skin of cattle.

It is well known that the whole ecologic system of a byre is integrated, and that any epidemiological study should include the skin beside the air, soil and other animal fomites.

In this study, the micro-organisms contaminating the skin of animals in previously investigated byre — was examined to find out the correlation between the animal's skin and its surrounding in an integrated ecological study in Sharkia Governorate.

MATERIALS and METHODS

The study was made in byres of different districts of Sharkia Governorate. The experimental animals included random samples of balady and Friesian cows and buffaloes varying in age from 5—10 years enclosed in 30 byres in Sharkia Governorate. The animals were kept on dirt floor stalls without partitions in between, no udder wash or antiseptic teat dip were used. The total number of animals encountered in this work were 120 animals.

Sampling:

Samples were taken from each animal before the afternoon milking. Two samples were taken from the same site of the animal in two successive days to ensure representative sample. The samples were taken from the teat, lower surface of the abdomen and from the surrounding of the mouth. These sites were swabbed with sterile cotton wool swabs moistened in infusion broth. After swabbing, the swabs were rotated in tubes containing 5 ml infusion broth and discarded.

Technique:

Inoculated tubes were incubated for 6 hours before transferring 0.1 ml from each to the surface of plates containing neutrient agar, sheep blood agar, Edward’s medium, McConkey medium and Sabouraud’s medium. All plates were incubated at 37°C for 24 hours except the Sabouraud plates which were kept at 27°C for 2 weeks. Suspected colonies were picked up for identification according to Marchen and Packer (1961) and Edward and Ewing (1972). Fungal colonies were identified culturally and microscopically according to Emmons (1963).

Results are shown in tables (1 & 2).

**DISCUSSION**

It is wise to say that the skin of the animal reflects the condition of its surrounding, the cleaner the surrounding the cleaner and healthy is the skin.

From table 1 it is evident that Staphylococcus aureus was contaminating 12 udders skin (10%) and 10 abdominal skin (8.3%). The organism is a serious cause of mastitis, its presence on the udder’s skin may lead to acute cases of mastitis or even subclinical cases (Zakaria, 1969). The organism was isolated from the udder skin of dairy cattle by Marica et al. (1969). The abdominal skin contamination may be derived from the soil, and it constitutes a hazard of polluting milk leading to serious human infections.

Haemolytic streptococci (aesculine splitting) was found on the udder skin only in 2 cases (1.6%). Its presence on the udder skin may be due to a latent infection with streptococcal mastitis, through the countless number of flies present in the byres (Meligi, 1977), or through the contaminated milker’s hands (Zakaria, 1978). The organism was stated to be the main cause of subclinical mastitis in Egypt (Zakaria, 1969, and Zakaria et al. 1978).

The entrobacteriaiceae group organisms were recovered from the skin of udder, abdomen and mouth in the following numbers of cases Strept. faecalis: 4, 18, & 8 respectively E. coli 13, 16, and 2 respectively, Proteus sp.: 2, 2 & 2 cases respectively, while Klitscilla sp. was isolated from one abdominal skin swab only. The recovery of such numerous strain of this group of organisms is a strict indication of the pollution of soil on which these animals lay and the insanitary conditions under which milk is produced.

In addition, Micrococi, Anthracoids and diphtheroids were isolated in variable percentages, their presence is of no hygienic significance.

Table 2 shows that many species of fungi were isolated from the skin surface of udder, abdomen and mouth. Aspergillus sp. were isolated from the skin of udder (6.6%) and abdomen (10%). They were isolated from cases of cutaneous aspergillosis in cattle by Davis (1962). The Mucor sp. were detected in 10 samples out of 120 (10%).

**Table 2**

<table>
<thead>
<tr>
<th>Organism</th>
<th>Incidence</th>
<th>Total No. of examined animals: 120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspergillus sp.</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Mucor sp.</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Penicillium sp.</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Candida sp.</td>
<td>8.3</td>
<td>8.3</td>
</tr>
</tbody>
</table>

on abdominal skin. The Candida sp. were isolated from the udder skin in 10 cases (8.3%) and from the mouth skin in 8 cases (6.6%), this mould was isolated from cases of acute and subclinical bovine mastitis by Oof (1969). All the examined regions were found to be contaminated with Penicillium sp.

These skin contaminations may be derived from the soil. Their multiplication and survival are favoured by the direteness of the skin.

It is important therefore to pay attention to the cleanliness of the animals specially the udder region and teats which should be treated with a suitable wash, frequent washing of the animals body to remove dirt and disinfecting the soil with a suitable disinfectant and fungicide.

ACKNOWLEDGEMENTS

Many thanks are due to Prof. Dr. M. Ashoub, Prof. of Hygiene, Fac. Vet. Med., Cairo University and Prof. Dr. M. Nasser, Prof. of Zoonoses, Fac. Vet. Med., Zagazig University for their kind help.

REFERENCES


