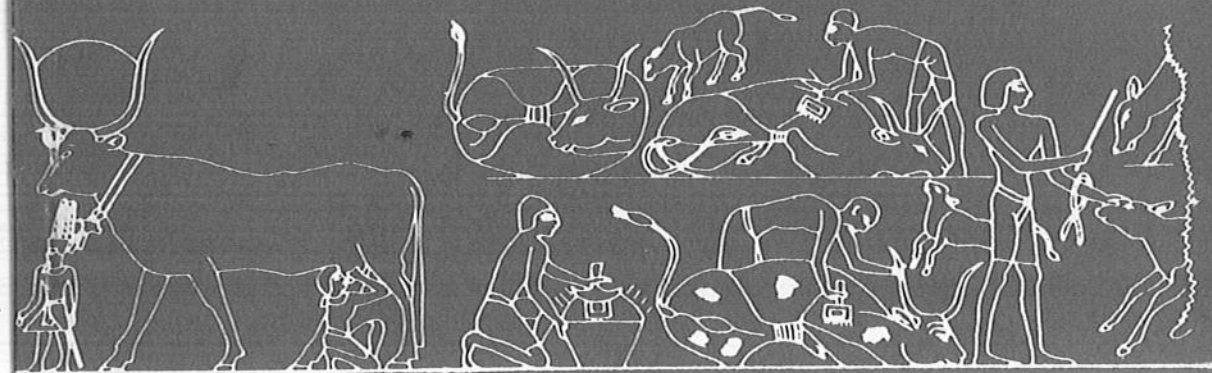


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**STUDIES ON COMMANSAL MICRO-ORGANISMS
INHABITING BOVINE SKIN
IN SHARKIA GOVERNORATE**

By

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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. & *Klebsiella* sp., the isolated fungi were *Aspergillus* sp., *Candida* sp. and *Penicillium* sp.

Skin of the abdominal regions were shown to be contaminated with *Staphylococcus aureus*, *Streptococcus faecalis*, *E. coli*, *Proteus* sp., and *Klebsiella* 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 *Penicillium* 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.

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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 nutrient 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 Marchant 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).

RESULTS

TABLE 1

Bacterial Contamination of the Animals skin and Their Incidence

	UDDER SKIN		ABDOMEN SKIN		MOUTH SKIN	
	Incidence	%	Incidence	%	Incidence	%
Pathogenic Staph aureus	12	10	10	8.3	0	0
Haemolytic Streptococci	2	1.6	00	0.0	0	0
Streptococcus faecalis	4	3.3	18	15.0	8	6.6
Escherichia coli	13	10.8	16	13.3	2	1.6
Proteus Sp.	2	1.6	2	1.6	2	1.6
Klibsiella	0	0	1	0.8	0	0
Anthraxoids	30	25.0	40	33.3	10	8.3
Micrococcus	30	25	35	29.1	20	16.0
Diphtheroid	0	0	0	0	4	3.3

Total No. of examined animals, 120.

TABLE 2
Isolated Fungi From The Skin And Their Incidence

	UDDER SKIN		ABDOMEN SKIN		MOUTH SKIN	
	Incidence	%	Incidence	%	Incidence	%
<i>Aspergillus</i> sp.	8	6.6	12	10	0	0
<i>Mucor</i> sp.	0	0	10	8.3	0	0
<i>Penicillium</i> sp.	4	3.3	8	6.6	2	1.6
<i>Candida</i> sp.	10	8.3	0	0	8	6.6

Total No. of examined animals ; 120.

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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 entrobacteriaceae 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 *Klibseilla* 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, *Micrococci*, *Anthracooids* 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%)

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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 diretness 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.

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REFERENCES

- Cullen, G.A. & Harbert, C.N. (1967) : Some ecological observations on micro-organisms inhabiting bovine skin, teat canals and milk. *British Vet. J.*, 123, 14—25.
- Davis, C.L. & Schaefer, W.B. (1962) : Cutaneous Aspergillosis in a cow. *J. Amer. Vet. Med. Ass.* 141, 1339—1343
- Edwards, P.R., & Ewing, W.H. (1972) : Identification of Entrobacteri-
anae. 3rd. Ed. Burgeon Publi. Co. Atlanta, U.S.A.
- Emmons, S.W., Binford, C.H. & Utz, J.P. (1963) : Medical Mycology. Philadelphia. 1963.
- Marchant, L.A. & Packer, R.A. (1961) : Veterinary bacteriology and virology, 6th Ed. Iowa State College Press. Ames. Iowa, U.S.A.

J. Egypt. Vet. med. Assoc., 80, No. 2, (1980)

Marica, D. May, J., Parau, T., Tatarnitchi, E. & Nadler, R. (1969) : Clinical bacteriological and epidemiological observations on udder furunculosis in cattle.

Berl. Munch. Tierarztl. Wschr. 82, 412—417.

Meligi, M., Zakaria, A.H., Nasser, M. & Metwally, M. (1977) : Viability of *Streptococcus agalactiae* in and on *M. Domestica* and the effect of some disinfectants on it in dairy farms *J. Fac. Vet. Med., Cairo Univ.*

Oof, F.M. (1969) : Thesis, Fac. Vet. Med., Cairo University.

Zakaria, A.H. (1969) : Thesis, Fac. Vet. Med., Cairo University.

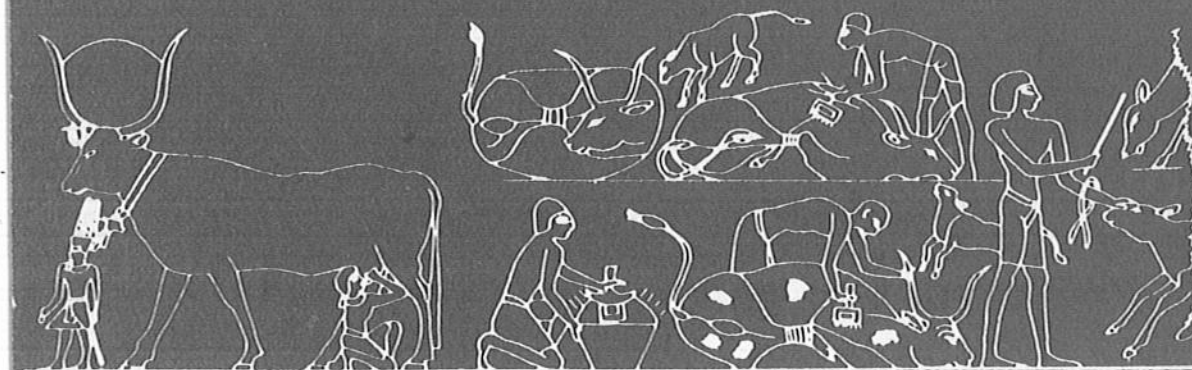
Zakaria, A.H., El-Bahay, G.M. & Nasser, M. (1978) . Incidence and viability of *Streptococcus agalactiae* in dairy farms. *J. Fac. Vet. Med., Cairo Univ.*

J. Egypt. Vet. med. Assoc., 80, No. 2, (1980)

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