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QUALITATIVE ANALYSIS OF RAW SKINS IN PAKISTAN

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The extent of attack of microorganism on collagen depends on the intensity of microbial growth, though mostly superficial in nature, yet affects the quality of leather and its texture. This paper highlights the cross section of microbial growth in raw skin after varying time intervals prior to curing.

Key words: Leather microbiology, Leather microbes, Skin micro-analysis

Introduction

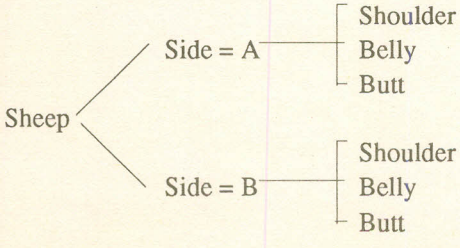
5-10% of hides and skins available in the country are of 'A' grade quality. Almost 40% of defects could be attributed to microbial fermentation. Nearly 30% is spoilage due to diseases, which is particular to area and climate. Flaying defects 20-25% which rises high in Eid-ul-Azha festival.

All defects involve microbes and in turn microbial enzymes damage the skin. Some related work was conducted and compiled in the form of Research Publication "Hide and Skin Microbes of Pakistan"-I", in 1978 by us and published in Pakistan Leather Trade Journal, Abstracted in JALCA Vol. LXXV No. 7.

However, no research work on this subject has been carried out in Pakistan. The present study will be helpful to up-grade the existing quality of raw material in Pakistan.

Materials and Methods

Sheep skin was purchased in raw condition, i.e. before salting and after flaying, from Rangiwara, Karachi. Skin was divided into sides, and the samples were taken as denoted below:



Experiments were conducted from Shoulder, Belly and Butt portions of each of the side. In each experiment 1 sq. cm piece of raw skin was taken and washed thoroughly with 10 ml of autoclaved tap water. 0.1 ml of washing was taken and mixed with fresh 10 ml of autoclaved tap water - out of this washing - 0.1 ml (0.001%) was inoculated in Petri plates using 10 ml of auto claved media (1:1000). The media used for study was nutrient agar for bacterial count and mycological agar for Fungi. Mode of study was pour plate technique. All plates, after inoculation using above mentioned technique, were incubated at 35° for 24 hrs. and developed bacterial colonies were counted.

The experiments were conducted 4, 6 and 8 hrs. after flaying from each of the sides of sheep skin and also from each of the part of skins i.e. shoulder belly and butt, the results are as described in Table1-3.

TABLE 1. COMPARATIVE ANALYSIS OF COLONY COUNT WITH RESPECT TO TIME INTERVAL

Time Interval	Sample No	Colony count	Sample No	Colony count	Average colony count
Shoulder					
4 hrs.	A1	NA 520	B1	NA 472	NA 496
		M 22		M 19	M 21
6 hrs	A2	NA704	B2	NA 272	NA 488
		M 108		M 53	M 81
8hrs.	A3	NA 384	B3	NA 440	NA 412
		M 140		M 84	M 112
Belly					
4 hrs	A1	NA 240	B1	NA 424	NA 332
		M 31		M 72	M 52
6 hrs.	A2	NA 360	B2	NA 832	NA 596
		M 140		M 240	M 190
8 hrs	A3	NA 496	B3	NA 264	NA 380
		M 240		M 216	M 228
Butt					
4 hrs.	A1	NA 552	B1	NA 184	NA 353
		M 68		M 38	M 53
6 hrs.	A2	NA 384	B2	NA 720	NA 552
		M 46		M 60	M 53
8 hrs.	A3	NA1088	B3	NA 480	NA 784
		M 320		M 336	M 328

Temp. 35°, Incubation time 24 hrs.
NA = Nutrient Agar.
M = Mycological Agar.
All readings are in 1:1000 ratio

Results and Discussions

In case of sheep shoulder, number of bacterial colony count did not vary much with increase in time interval after flaying, while number of fungal colony count show a marked

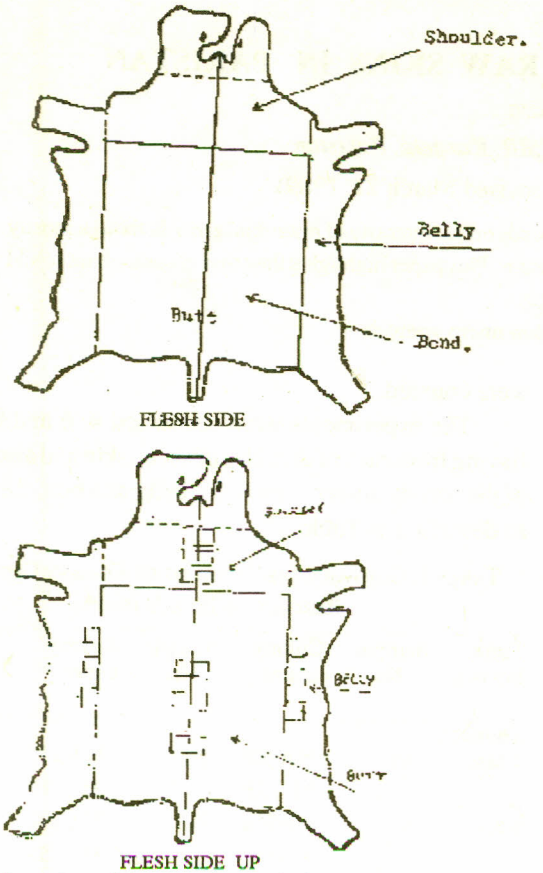


Fig 1. Location of the experimental pieces

enhancement with increase in time interval. In Belly samples, number of bacterial as well as fungal count show increase with time interval, but in case of fungal, this increase is quite marked.

In sheep Butt portion samples, bacterial count increase is highest with increase in time interval in comparison to shoulder and belly portions. For highest bacterial count with increase in time it is inferred that as manure and urine is available in Butt portion, which proves as an enriched media for bacterial growth and resulted in high colony count.

Fungal count increase is also highest with time interval increase i.e. colony increase is more than 6 times, while time interval is only twice, it also denotes a certain lag period or 4 hrs. stationary phase, which later boosts up and results in 6 times increase.

Conclusion

It is observed that bacteria invade animal skin right from the start and establish their growth activities with increase in time interval after flaying, . If the skin is left unchecked i.e. raw skin without application of any preservative, it becomes gelatinised after certain time period, which depends on climatic conditions and skin colony count.

For fungi its number go on increasing with increase in time after flaying. Fungal spores are abundantly present in atmosphere unless some measures are applied to check this phenomenon.

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