STUDY ON CONNECTIVE TISSUE FIBRE IN NECK SKIN OF GOAT

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ABSTRACT

Dermis of skin of experimental animal consisted of felt work of collagen, elastic, reticular fibers, sweet glands, sebaceous glands, hair follicles and arrector pilis muscles. The collagen fibres were fine, loosely arranged and irregularly distributed in the papillary layer and were thick and densely arranged in reticular layer. Elastic fibres were rare and finely branched in the papillary layer and arranged perpendicular to skin surface. The reticular fibers were abundant in the dermo-epidermal junction, around the sweat glands, sebaceous glands and walls of the blood vessels and in the capsule of hair follicle.

INTRODUCTION

Goat is a multipurpose animal and is valued for the production of meat, milk, fibres and hide. It has been observed that different types of follicles produce variety of fibres like kemp's, hairs and fine fibers (Fraser, 1953). Studies on fleece quality and follicle character at an early age of animals assist in their selection for future breeding programme (Koratkar and Patil, 1983). A meagre information on fibre arrangement in dermis of goat is available in literature and therefore the present study was undertaken.

MATERIAL AND METHODS

The present study was conducted on twelve Osmanabadi male goats of one to one and half years age. The skin samples were collected from neck region and then fixed in 10% neutral buffered formalin (Singh and Sulochana, 1978). Tissues were processed and sectioned using routine histological procedures. The paraffin tissue sections of 5 to 6 micron thickness were stained with Harri's haematoxylin and eosin stain for general histology, Weigert's - Van - Gieson stain for elastic and collagen fibres, Weigert's-Resorcin-fuchsin stain for elastic fibres, Verhoeff's stain for elastic fibres and Silver impregnation stain for reticular fibers (Mukherjee, 1988). The micrometry of the stained histological sections was conducted by ocular micrometer. The thickness of dermis was recorded. The data collected was subjected to statistical analysis as per the standard procedures (Panse and Sukhatme, 1967).

RESULTS AND DISCUSSION

The meshwork of the dermis consisted of feltwork of collagen, elastic, reticular fibres, sebaceous and sweat glands, hair follicle, arrector pilis muscle. These observations were in accordance with the findings of Sar and Calhoun (1966) in American goats, Dellmann and Brown (1987) in domestic animals, Gayen et al. (1989) in Black Bengal goats. Dermis was with upper papillary and deeper reticular layer (Fig. 1) without clear demarcation between them. The thickness of dermis ranged from 69.93 to 119.81 μ with a mean of 95.14±5.40 μ (Table 1) in present study could not be compared for want of similar records.

The occurrence of irregular distribution of fine collagen fibres (Fig. 2) in the papillary layer and dense arrangement of thick collagen fibres in reticular layer (Fig. 3) in the present study. Similar observations were recorded by Sar and Calhoun (1966) in American goats and Gayen et al. (1989) in Black Bengal Goats. The bundles of these fibres usually arranged parallel to skin surface.

The elastic fibres were rare and finely branched in papillary layer and reticular layers and arranged perpendicular to the skin surface.
Table 1. Measurements of thickness of Dermis (Values are in microns)

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<th>Parameters</th>
<th>Range</th>
<th>Mean</th>
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<tr>
<td>Dermis</td>
<td>69093 to 119.81</td>
<td>95.14</td>
<td>5.30</td>
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Fig. 1. Photomicrograph of the skin of Osmanabadi goat x 100
a) Epidermis
b) Papillary layers
c) Reticular layer
d) Reticular fibres
e) Primary hair follicles
f) Secondary hair follicles

Fig. 2. Photomicrograph of the skin of Osmanabadi goat x 400
a) Reticular layer of dermis
b) Collagen fibres
c) Blood vessels

Fig. 3. Photomicrograph of the skin of Osmanabadi goat x 100
a) Epidermis
b) Collagen fibres
c) Hair follicles
in the present study, however Sar and Calhoun (1966) reported predominance of these fibres in the skin of the young American goats which might be due to breed variation. The elastic fibers were thick and located at both ends of arrestor pili muscles attaching to hair follicles in reticular layer.

The parallel and perpendicular arrangement of collagen and elastic fibres observed in present study was in collaboration with the findings of Sar and Calhoun (1966).

The reticular fibres (Fig. 1) were abundant in the dermo-epidermal junction around the sweat glands, sebaceous glands, walls of the blood vessels and in the capsules of hair follicles. These findings were in arrangement with Sar and Calhoun (1966) and Gayen et al. (1989) in goats.

REFERENCES