CONNECTIVE TISSUE FIBER ARRANGEMENT
OF SKIN IN RED KANDHARI COWS

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ABSTRACT
For the present study fifteen female Red Kandhari cattle were used. The skin of the Red Kandhari cow consisted of epidermis, dermis and hypodermis. The dermis was enmeshed with collagen, elastic and reticular fibers. The collagen fibers were found thick, coarse and irregularly distributed in all the three body regions. These fibers were loosely arranged in the papillary layer but dense arrangement of large bundles of collagen fibers were commonly observed in the reticular layer of the dermis. The collagen fibers were more developed in lactating cow as compared to that of non lactating and pregnant Red Kandhari cow.

Majority of the mammals are covered with hair coat, which forms the first line of defense against the invading pathogenic macro and microorganism as well as physical environment (Govindaiah and Nagaroenkar, 1983). Very less data is available in literature related to histology of skin. Hence the present investigation has been made.

The present study was conducted on 15 (fifteen) female Red Kandhari breed of cattle. The animals were grouped as lactating cows, non-lactating cows and pregnant cows. The skin biopsy samples were collected at the site of dorsal, lateral and ventral aspects at level of 7th rib, and fixed in 10% formalin. The tissue were processed in laboratory by adopting standard method of dehydration and clearing and embedding. The longitudinal and transverse sections of 5 to 6 microns thickness were obtained by rotary microtome (Singh and Sulochana, 1997). The tissues were stained by using a harries haematoxyline and eosin stain for general histology (Mukherjee, 1992). Van Gieson’s stain, silver impregnation stain, verheff’s stain, crossman’s modification of Mallory’s triple stain and periodic acid schiff stain.

The micrometry of stained histological sections was subjected to statistical analysis as per the standard procedures of Panse and Sukhatme (1967).

The dermis consisted of a feltwork of connective tissue fibers. These fibers were collagen, elastic and reticular types. Similar findings were recorded by Shahjahan et al. (1977) in Murrah water buffaloes, Calhoun and Stinson (1981), Lesson et al. (1988) and Dyce et al. (1996) in domestic animals. The collagen fibers were found to be thick, coarse and irregularly distributed in all the three body regions. These fibers were loosely arranged in the papillary layer but dense arrangement of large bundles of collagen fibers were commonly observed in the reticular layer of the dermis. The bundles of collagen fibers were usually arranged parallel to the skin surface and formed a close attachment of dermis to the epidermis.

The elastic fibers were finely branched in the papillary layer than the reticular layer of dermis. These fibers were arranged perpendicular to skin surface and were found at both the ends of arrector pili muscles attaching to hair follicles in the reticular layer. These findings were in agreement with the findings of Bayani and Vyas (1991) in Gir cattle and Dellman and Brown (1987) in domestic animals. Anikiri (1975) reported the presence of elastic fibers in the reticular layer of dermis in European cattle. However Fazzini and Peirone (1985) reported that the regression of the elastic fibers commenced at 6 years of
age in predominant cattle.

The reticular fibers were more thicker than collagen and elastic fibers. They were abundant in the dermo epidermal junction, around sweat and sebaceous glands and wall of the blood vessels in all the three groups of animals. Formation of sheath around the hair follicles by collagen and elastic fibers in present study was in accordance with the findings of Calhoun and Stinson (1981).

The collagen fibers were more abundant in the dermis in lactating cow. The elastic fibers were loosely bound and reticular fibers were more dense. In the dermis the collagen fibers were loosely bounded in non-lactating cows. The elastic fibers were branched in the papillary layer.

The collagen fibers were found very less in amount in dermis of pregnant cow. The elastic fibers were loosely distributed. The reticular fibers were more dense and situated at the reticular layer.

REFERENCES