

The Dermis of *Millivora Capenesis*

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Abstract

The present study was conducted on the dorsal skin of three (*Millivora Capenesis*), Dermis were collected from healthy animals, formalin fixed and carried out routine histological procedure, then section at thickness six micrometer and stained by Hematoxylin and Eosin stain. Histologically, the dermis was composed of the papillary and reticular layers, the papillary layer was formed from loose connective tissue, composed of a bundant collagenous fibers, few elastic fibers, net work of blood capillaries, large artery, large vein and meissner, and pacinian corpuscles (tactile corpuscles), the deeper layer of dermis was contain dense connective tissue that included skin appendages such as hair, sebaceous glands, sweat glands, there was two types of hair follicles, primary and secondary follicles, the sebaceous glands which surrounded the hair follicles, these glands were alveolar glands, while sweat glands were simple saccular glands that lined by low cuboidal epithelium from another hand, the ducts of sweat gland was lined by stratified cuboidal epithelium. the meissner corpuscle was singly located in the papillary layer of the dermis, while the pacinian corpuscle was found in the reticular layers, our findings were showed these corpuscles as onion shapes. The dermis of *Millivora Capenesis* consist of papillary and reticular layers with skin layer appendage; Sweat gland, sebaceous glands, primary and secondary hair follicles with meissner and pacinian corpuscles.

Key words: *Millivora Capenesis*, Dermis, Collagenous Fibers, Skin, Hair Follicles

1-Introduction

The dermis is divide in to main two layers, the first layer is papillary layer, consist of fine fibers locate beneath the basement membrane (1). the second layer is reticular layer, distinguished in thickness and more abundant in the fibrous elements, contains on large bundles of collagenous fibers, elastic fibers with few of reticular fibers (2). Many previous studies were observed good blood supply for the skin dermis, that represent of the large subcutaneous arteries extension which branched and supply the all parts of the dermis, these blood vessels were terminated as capillaries plexuses, that nurish the dermal papillae, hair follicles and skin glands (3). the skin is supply via large number of sensory nerve fibers, these fibers surrounded by myelinated sheath. which extend to the blood vessels, hair follicles and skin glands (4). the most afferent sensory nerve fibers in the dermis is response to different stimuli due to increase or decrease in the temperature and

external pressure, the nerve ending were described in the different regions of dermis which included meissner and pacinian corpuscles (5). The mammals dermis consist of dense regular connective tissue, extend to subcutaneous region and divided into a superficial papillary and deep reticular layers (6). The skin appendages are projects out of the body surface, that includes the hairs, and some skin appendages such as sweat glands and sebaceous glands, they provides a variety of functions like environmental protection and adaptation (7). *Millivora capensis* belongs to family; Mustelidae, subfamily; Millivorinae; Genus *Millivora* and species *capensis*, the distribution of animal around the argriculture regions. *Millivora* is distribute in south western Asia and Africa (10).

The purpose of present study is to determine the normal histological structure of *Millivora capensis* dermis.

Material and Methods 2-

Three females of *Millivora capensis* used in this present study, these animals killed via farmers live. The average age of *Millivora capensis* (3.5) years old, the age was estimated according to (11). The skin of animals were removed by skinning process. The dorsal skin specimens were fixed in (10%) formalin solution. The histological preparations carried out on skin specimens, like dehydration with graduate ethyle alcohol (70%, 80%, 90%, and absolute ethyle alcohol), after that clearing in xylol then embedding in medical wax paraffin to prepare histological blocks, and cutting via rotatory micrometer in thickness after that the histological section were stained by Hematoxylin and Eosin (12).

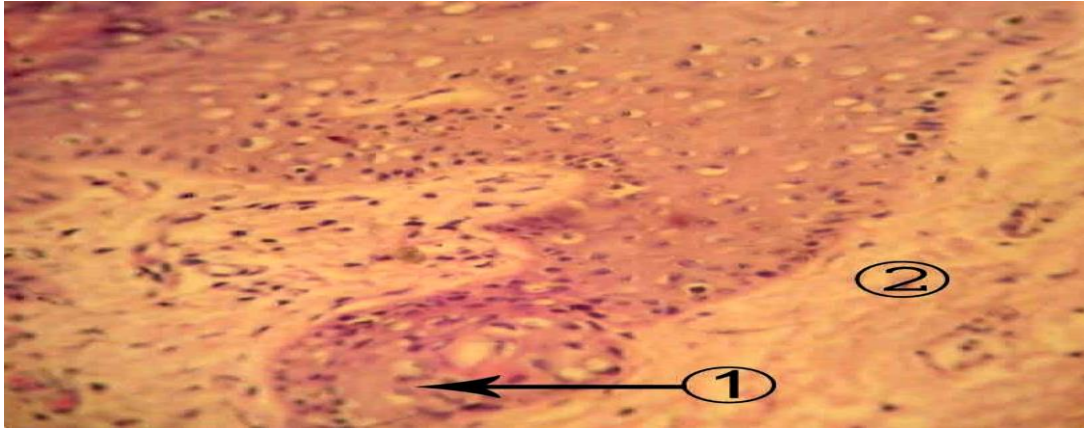
3-Results and Discussion

The dermis of *Millivora* was thicker than epidermis. The dermis consist of dense irregular connective tissue; composed of fibrous connective tissue, mainly collageneous fibers (Fig. 1), showed the projection of epidermal papillae that extend in to the papillary layer of dermis. From another hand, there are smooth muscle bundles, blood vessels, lymphatic vessels, nerve and nerve ending. The epidermal appendages, such as sweat glands, sebaceous glands and hair follicles were found in the reticular layer of dermis, those observations were similar to previous studies (13, 14, 15). The dermis of *Millivora* was divided into the superficial layer formed from loose connective tissue consisting abundant collagenous and few elastic fibers.

The papillary layer of dermis was located superficially, its contain a net work of blood capillaries. Large blood vessels were found in deep layer of *Millivora* dermis (Fig. 2, 3) were revealed layer vein and large artery.

Millivora hairs was consisted of keratin strands, hair follicles, hair cortex, internal sheath, hair shaft, internal root sheath and hair medulla, the hair follicle was surrounded by sebaceous gland, there are two types of hair follicles in the dermis of *Millivora capensis*; that involved primary and secondary hair follicles (Fig. 4, 5), noticed the hair follicles and sebaceous gland were located in the reticular layer of the dermis, these findings was varied from hairs of goat, was devoid from hair medulla (16).

The sebaceous glands in the dermis of *Millivora* were related to the hair follicles. Our observations about the sebaceous glands were appeared multilayered gland devoid from the lumen, this finding was agreed with current result (17) was carried out on the human skin, who mentioned, the sebaceous gland was consisted of alveolar gland with out lumen, they are basophilic cells and light cells with pyknotic nuclei are visible in the inner sebaceous acini.



Figuer1:Millivora capensis dermis,epidermis papilla(1).papillary layer(2). Hematoxylin and Eosin.400x

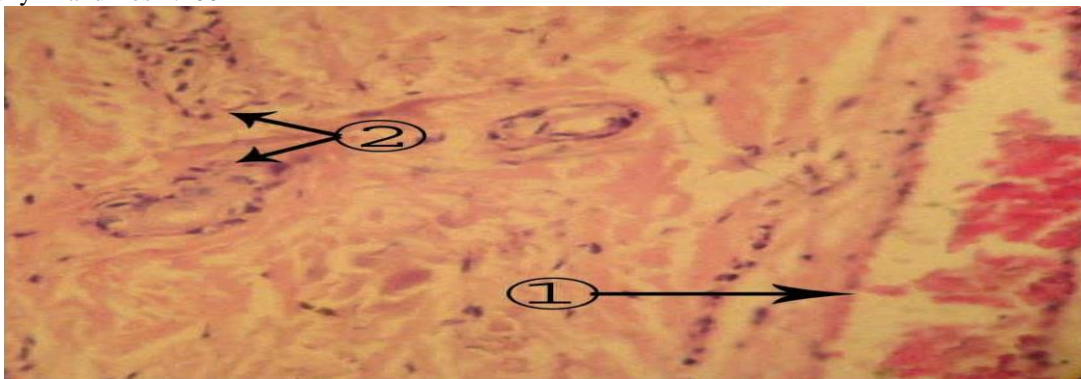
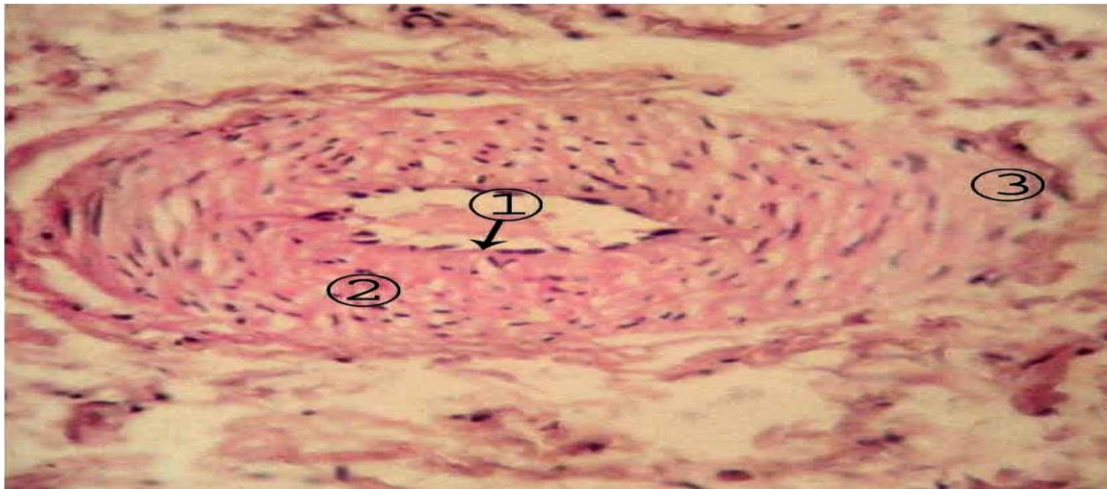
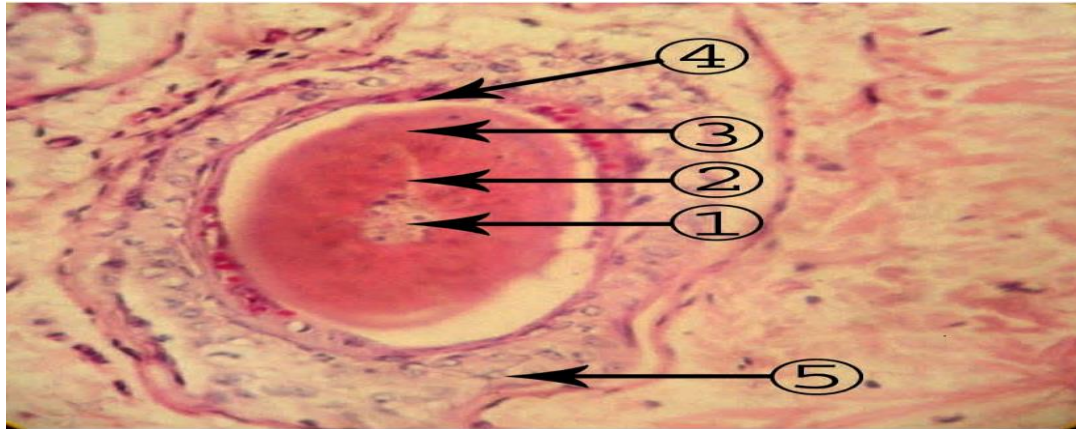


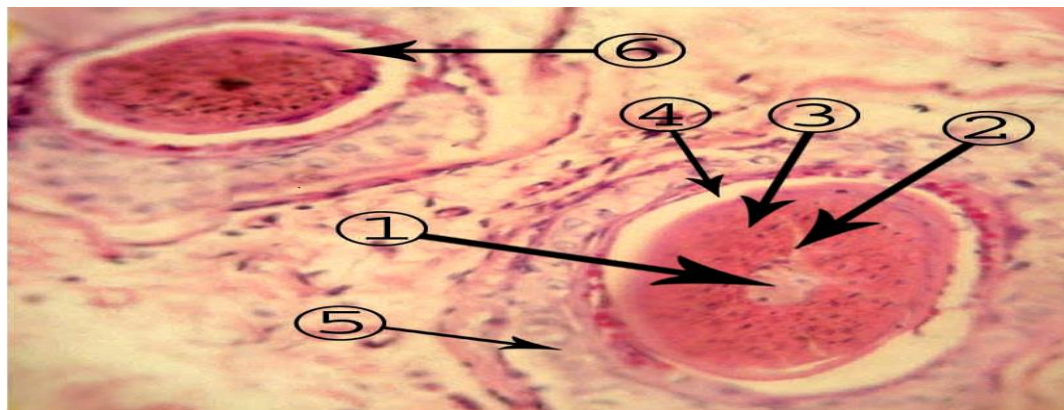
Figure2: Millivora capensis dermis, show large vein(1)near to the sweat gland(2) Hematoxylin and Eosin.200x



Figuer3: Millivora capensis dermis, Appear large artery, Tunica intima (endothelium) (1). Tunica intima (smooth fibers)(2).Tunica adventitia(c.t) (3). Hematoxylin and Eosin.200x



Figuer4:Millivora capensis hair follicles primary ,consist of hair medulla(1). Internal sheath(2).hair cortex(3). hair follicle.that surroudy by sebaceous gland(5).Hematoxylin and Eosin.200x



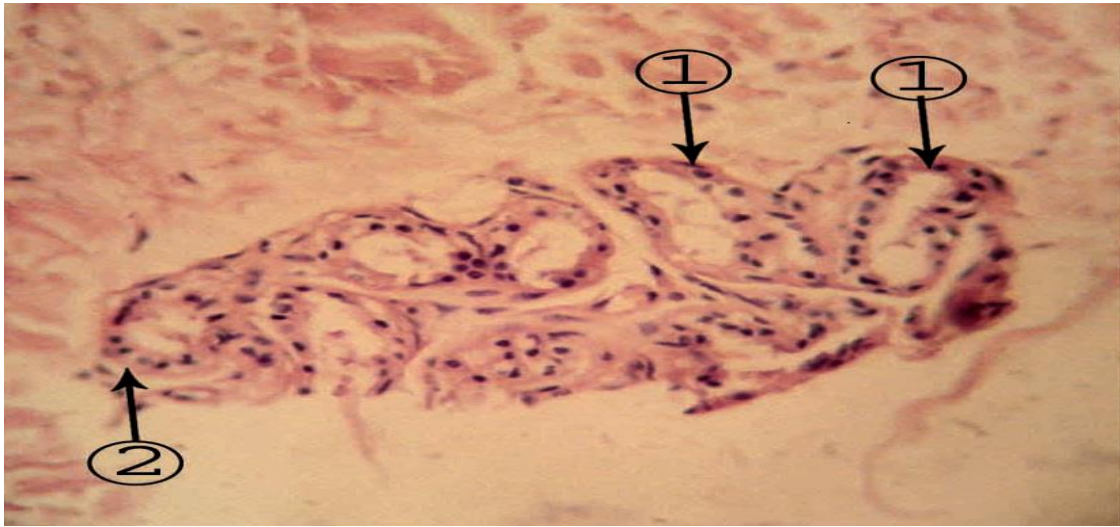
Fiuger5:Millivora capensis hair follicles (primary),consist of hair medulla(1). Internalsheath(2).haircortex(3). Hair follicle.that surroudy by sebaceous gland(5).second hair follicle(6). Hematoxylin and Eosin.200x

The sweat glands in the Millivora dermis were found in the reticular layer , sweat glands were simple tubular , that similar to saccules , these saccules were lined by low cuboidal epithelium (Fig. 6) . From another hand the sweat gland duct (Fig. 7) was colied and extended in to the superficial layer in order to open at the epidermis , the duct was lined by stratified cuboidal epithelium , these observations were accordance with previous histological studies (18,19) , they mentioned , the sweat gland in sheep and in domestic animals were simple tubular or saccular , but the secretory cells of sweat glands were lined with a simple squamous to cuboidal epithelium .

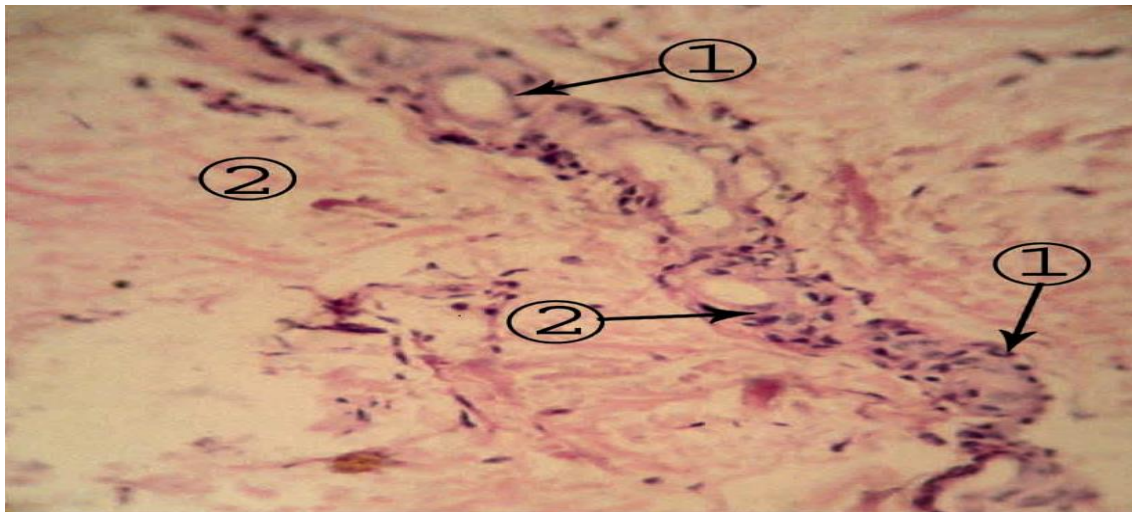
The Millivora dermis was supplied by sensory nerves , its formed from nerve fiber enclosed by myelin sheath or with out myelinated sheath .

In this present study was recorded tow types of nerve ending corpcules – 1- Meissner

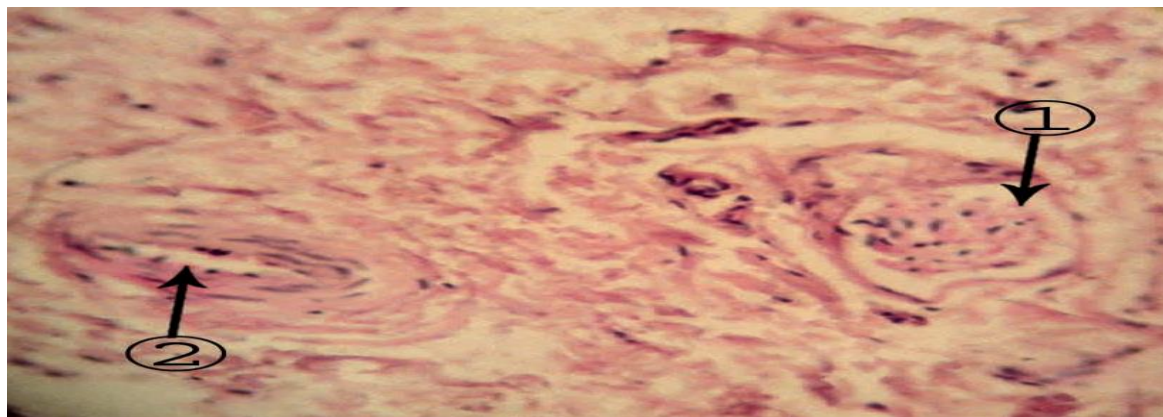
corpcule (Fig. 8) were lamellar bodies with out perineural capsule , this tactile corpcule was occurred singly under the epidermis -2- pacinian corpcule (Fig. 9) was layer lamellar corpcule , that located in the papillary layer of dermis , these findings were identical with previous investigations (20) , who found two kinds of cut aneous sensory nerve corpcules , he mentioned , the afferent nerve fibers reached to the meissner corpcule , while the sheath of terminal nerve ending of pacinian corpcule was arranged in onion . like , due to concentric of cytoplasmic processes (perineural lamellae) .



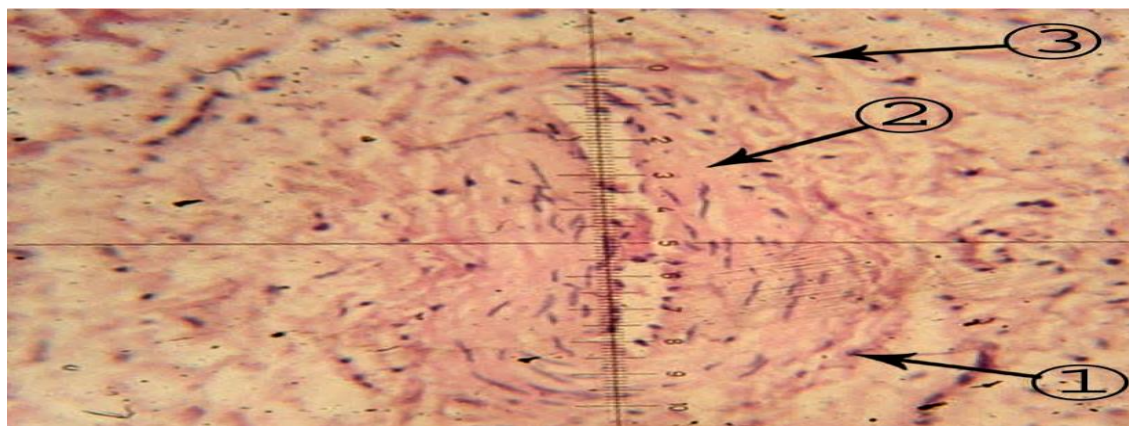
Figuer6: Millivore capensis,sweat gland, compsed of simple tupular or saccular, alveoli(1) that lined by low cubudal epithelium(2).Hematoxylin and Eosin.200x



Figuer7:Millivora capensis,sweat duct, appeared as coiled duct(1).Extened in the papillary layer(2)of dermis,the duct that lined by stratified cuboidal epithelium.Hematoxylin and Eosin.200x



Figuer8: Millivora corpuscle(1)in Millivore capensis medium size artery(2).
Hematoxylin and Eosin.100x



Figuer9:Pacinian corpuscle(1)in
Millivore capensis consist of lamellar body (2)perineural sheath(3). Hematoxylin and Eosin.400x

References

- (1)-Arao , H . ; Obala , M . ; Shimada , T. and Hagsisawa , S. (1998). Morphological characteristics of the dermal papillae in the development of pressure sores . J . Tiss . Viabil . , 8: 1-7 .
- (2)- Kanitakis , J . (2002) . Anatomy , histology and immunohistochemistry of normal human skin . Eur . J . Dermatol . 12 : 390 -401) .
- (3)- Boverman , I . (2000) . The cutaneous microcirculation . J . Invest . Dermatol . Symp . proc . ; 5 : 3-9 .
- (4)- Egan , C. Viglione , M. ; Wash, L. (1999) . characterization of un myelinated axons uniting epidermal and dermal immune cells in primate and murine skin . J . cutan . pathol . , 25 : 20 -29 .
- (5)- Rook , A. ; Wilkinon , D. and Ebling , J . (1989). Text book of dermatology . Black well , 1st ed . Oxford .
- (6)- Aughy , E . and Frye , F. (2001) . Comparative Veterinary Histology with clinical correlates . 1st ed . Manson . London . pp : 129 – 130 .
- (7)- Widelitz – Randall , B . ; Ting- Xin ,J .; Alexander ,N. , Sheree , A. ; Ting- Berreth , E. ; Han- Sung, J. and cheng – Ming , C. (1997) . Molecular Histology in skin appendage morphogenesis . Microsc. Res . Tech ., 38: 452-465 .
- (8) – Begg , K. ; Beeg , C. and Abramov, A . (2008) . Millivora capensis In IUCN (2008) . Red list of Threatened species : pp :1 .

(9) – Baryshnikov , G . (2008) . A new subspecies of the honey badger *Millivora capenesis* from central Asia . *Acta theriologica* ; 45 : 45-55 .

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