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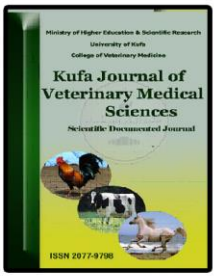

Comparative microscopically study of the skin in local and wild rabbits

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Abstract

This study was prepared to compare between the skin of local and wild rabbits. The samples were taken from five body region (ear, abdomen, neck, thorax and back).The present study revealed that the basic structure of the skin in local and wild rabbits formed of supperfacial layer is epidermis, which covered with keratinized stratified squamous epithelium and arranged into four rows from cells, beside thickness of epidermis in local rabbit more than that thickness of epidermis in wild rabbits .The deep layer is dermis which dermis divided into two layers, the superficial papillary and deep reticular layers without a clear line demarcation between two layers. Local rabbit dermis was thicker than that wild rabbit dermis due to density of dense irregular connective tissue and fibers. There are two types of hair follicles in both animals was primary and secondary hair follicles. The follicles consists of one into three primary hair follicles and clusters of secondary hair follicles in local rabbit whereas in the wild rabbits, the follicles consists of central primary hair follicles and several of smaller secondary follicles surrounded the central primary hair follicles. The present study revealed that ratio of secondary to primary hair follicles was less in local rabbits than that wild rabbits.

Keywords: Histology, epidermis, dermis, hair follicles, local rabbit and wild rabbit.

دراسة نسجية مقارنة للجلد في الأرانب المحلية والأرانب البرية

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الخلاصة

صممت هذه الدراسة للمقارنة النسجية بين جلود الارانب المحلية والارانب البرية اخذت العينات من مناطق (الأذن ، البطن ، الرقبة ، الصدر ، الظهر) . النتائج الموجودة تشير بأنه التركيب الأساسي للجلد في الأرانب المحلية والأرانب البرية يتكون من طبقة سطحية هي البشرة التي تغطى بظهارة مطبقة حرشفية ومرتبة الى اربعة صفوف من الخلايا. من جانب أخرسمك البشرة في الأرانب المحلية اكثر من سمك البشرة في الأرانب البرية. الطبقة الغائرة هي الأدمة التي تقسم الى طبقتين هما الطبقة السطحية والطبقة العميقة الشبكية حيث لا توجد حدود فاصلة واضحة بين الطبقتيين. الأدمة في الأرانب المحليةتكون اسمك مما هو عليه في الأرانب البرية نتيجة لكثافه الأنسجة الرابطة الكثيفة الغير منتظمة والألياف. هناك

نوعان من جريبات الشعر في كلا الحيوانيين هما جريبات الشعر الابتدائية وجريبات الشعر الثانوية هذه الجريبات تتكون من واحد الى ثلاثة جريبات شعر ابتدائية ومجموعة من جريبات الشعر الثانوية في الأرانب المحلية بينما في الأرانب البرية تتكون الجريبات من جريبات شعر ابتدائية مركزية ومجموعة من الجريبات الثانوية الأصغر التي تحيط جريبات الشعر الأبتدائية المركزية. كذلك النتائج الموجودة تشير بأنه نسبة الجريبات الثانوية الى الابتدائية تكون اقل في الأرانب المحلية من الأرانب البرية.

الكلمات المفتاحية: علم الأنسجة، البشرة، الأدمة، جريبات الشعر، الأرنب البري، الأرنب المحلي

Introduction

Rabbits are a popular ideal in laboratory animal medicine mainly in the fields of human dermatology, experimental toxicology and experimental pharmacology (1). Local rabbits are all purpose animals. High quality rabbit of the skins are used in fur garments and trimmings in medicinal and beautifying research (2, 3). Skin consists of an epidermis and dermis joined to underlying structures such as muscle and bone by the subcutis (4). The epidermis consists mainly of a stratified squamous keratinized epithelium (5). The dermis composed mainly of irregular connective tissue in which run blood vessels and nerves, and in

which are embedded the hair follicles (6). The hair are arranged in groups and project in bundles from the funnel-shaped opening of the hair follicles, the individual groups of hairs are made up of one primary follicles and multiple smaller secondary follicles located around them (7). Aim of study to know the histological differences between two animals.

Materials and Methods

Animals and skin Samples

Skin samples were taken immediately after slaughtering of adult males of local and wild rabbits. The samples were taken from five body areas (ear, neck, thorax, back, and abdomen). Specimens were fixed in 10% Neutral buffered formalin for 24 hours. Other histological processes were carried out such as washing with tap water dehydration with sequential concentration of graduated alcohol (50%, 60%, 70%, 80%, 90% and 100%), Xylen was used as clearing reagent, and then samples immersed in paraffin blocks. Paraffin blocks were cut about (5-7 µm), and then stained by hematoxylin and eosin (8). Material micrometer was used for measuring the thickness of each skin layer, Mean secondary follicles/primary follicles ratio (S/P) of compound follicles by using light microscope.

Results and Discussion

Microscopic examination

The histological examination of hematoxylin and eosin staining sections, showed that the skin of local and wild rabbits consist of two main components, the epidermis and dermis, (Fig, 1and 2).

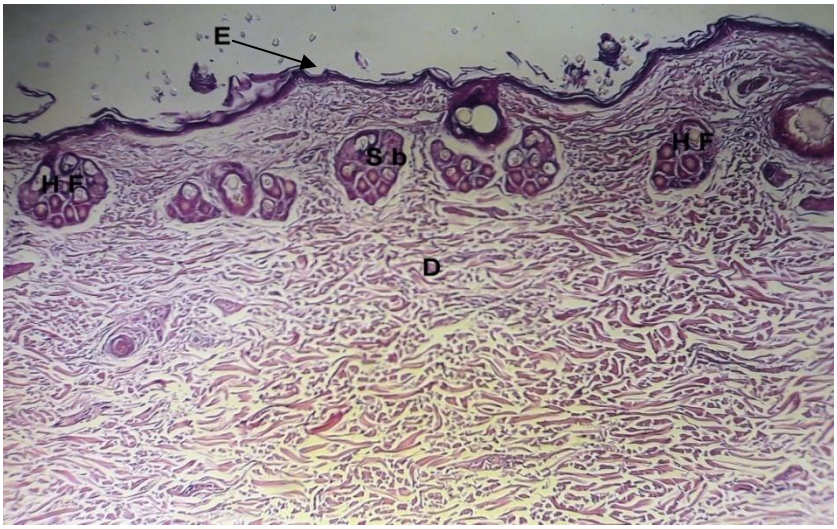


Figure (1): sections of the skin in the local rabbits showed epidermis(E), dermis(D), hair follicles(H F) and sebaceous gland(S b). H&E, X100.

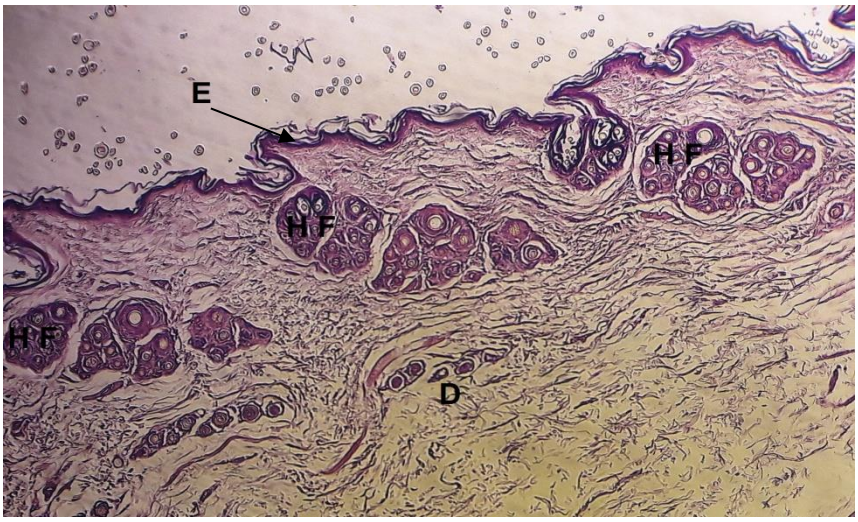


Figure (2): sections of the skin in the local rabbits showed epidermis(E), dermis(D), and hair follicles(F). H&E, X100.

Epidermis

The epidermis in local and wild rabbits was covered with keratinized stratified squamous epithelium. Its four cell layers, this was similar to the results of (7,9). In the local and wild rabbits, the deepest layer of the epidermis is the stratum basale. It consists of a single layer of columnar epithelium which is adhered to the basal lamina. Above the stratum basale is the stratum spinosum. Spinosum cells are large polygonal cells with prominent desmosomal intercellular filament, which act like bridges between the cells. External to the stratum spinosium, lies the stratum granulosum. Granular cells are thin, flattened keratinocytes with variably prominent keratohyaline granules. The stratum corneum is the outermost layer of the epidermis, consisting of dead cells (corneocytes). This layer is composed of flattened cells with no nuclei and cell organelles (Fig,1 and 2).The stratum lucidum were not seen in local and wild rabbits this was in variance with the findings of (5). The present study found that the highest thickness of the

epidermis in local and wild rabbits was in the ear areas (41.20±1.5 and 29.16±2.6) respectively, whereas the lowest thickness was in the back (21±1.2 and 14.16±1.9) respectively,Table(1).

Dermis or corium

The dermis (corium) in local rabbit and wild rabbit consist of dense irregular connective tissue with collagen, elastic and reticular fibers, hair follicles, sebaceous glands, blood vessels. The dermis divided into two layers, the superficial papillary that mixtures into a deep reticular layers without a clear demarcation, this was similar to the findings of (6) in chinchilla. In local rabbit and wild rabbit, dermis (corium) was thicker than the epidermis, and it varies in thickness according to the region of the body that it is covering.

(Table2) Showed the overall thickness of skin was more in the local rabbit that in the wild rabbit. This is mainly due to a thicker epidermis and corium in local rabbit, which measured thickness of the epidermis and corium in wild rabbit.

Table(1):The thickness of epidermis and dermis in local and wild rabbits (micrometer).

Areas	Epidermis		Dermis	
	Local rabbit Mean ± SE	Wild rabbit Mean ± SE	Local rabbit Mean ± SE	Wild rabbit Mean ± SE
Ear	41.20±1.5**	29.16±2.6	470±1.5	462±3.2
Abdomen	22.60±1.5*	16.66±1.3	1291.66±2.5**	720±2.5
Neck	23.20±1.8	22.5±2.2	1275±4.5**	830±4.4
Thorax	23.60±1.8*	18.33±2.07	883.33±2.2**	610±5.6
Back	21±1.2**	14.16±1.9	1446.66±0.6	1260±7.3

* Represent significant differences at (P<0.05).

** Represent significant differences at (P<0.01).

Table(2): The total skin thickness in local and wild rabbits (micrometer).

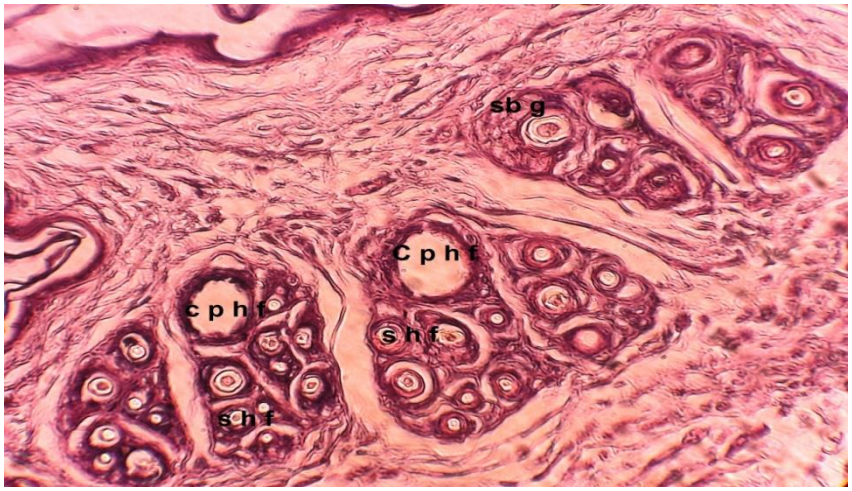
Region	Total skin thickness in local rabbit Mean ± SE	Total skin thickness in wild rabbit Mean ± SE
Ear	511.2±0.11*	491.16±1.16
Abdomen	1314.26±1.16*	736.66±1.16
Neck	1298.2±0.64*	852.5±0.70
Thorax	906.93±1.15*	628.33±0.58
Back	1467.66±1.16*	1274.16±0.57

* Represent significant differences at (P<0.05).

Hair follicles

The hair follicles were current in all body areas in local rabbit and wild rabbit. Local rabbit and wild rabbit had compound hair follicles, this was in accordance with the finding of (10). The compound hair follicles of the local rabbit arranged in groups of one to three primary follicles and several smaller secondary follicles while the compound hair follicles of the wild rabbit were arranged in groups or hair bundles. Compound hair follicles formed of central primary hair follicles and clusters of smaller secondary follicles located around them (Fig, 3 and4), this was confirm to the results of (6) whereas the present result was in variance with the findings of (11), who referred that the hair follicles in domestic animals was of simple type.

Figure(3): Compound hair follicles in local rabbit:-primary hair follicles(p h f) and secondary hair follicles(s h f), sebaceous glands (sb g) H&E,X400.



Figure(4): Compound hair follicles in wild rabbit:-central primary hair follicles(p h f) and secondary hair follicles(s h f), sebaceous glands (sb g) H&E,X400.

(Table3) showed that the ratio of secondary to primary hair follicles was higher in the wild rabbit than the local rabbit, this table also showed that the highest ratio of secondary to primary hair follicles was in the back region (19/1, and 8/1) respectively, and less in the ear region (4/1, and 3/1) respectively.

Table(3):showed the ratio of secondary to primary hair follicles in local and wild rabbits.

Areas	Ratio of secondary to primary hair follicles (S/P) in local rabbit	Ratio of secondary to primary hair follicles (S/P) in wild rabbit
Ear	3/1	4/1
Abdomen	4/1	8/1
Neck	5/1	13/1
Thorax	6/1	14/1
Back	8/1	19/1

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