Development of Wattles in the Chicken Embryo

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Abstract

In this study, 120 fertilized chicken eggs were collected and the eggs were divided into two groups, 60 eggs for each group, and placed in the silage at a temperature of 37 °C. These two layers arise from two different sources, where the epidermis arises from the ectoderm and is one layer at the beginning of formation and then multiplies, while the dermis arises from the mesoderm and is in multiple forms. Wattles are made up of two layers, the epidermis and the dermis. Two layers are created in the area of the pendants from two different sources. The tissue components of the pendants are the same as the tissue components of the skin, but differ from it in the thickness of the layers and more blood vessels.

Introduction

The skin of birds is thin and elastic, and is attached to the body in a semi-free manner, which allows the bird to move and fly. The rate of skin thickness in birds varies from one region to another, so it is thin in areas covered with feathers (less thick than the skin of mammals), and it is thick in areas without feathers such as feet and areas around the face (1).

The skin has many functions, one of the most important of these functions is the protective role, as it plays a role in protecting the body from wounds and trauma. The stratum corneum of the epidermis plays a role in preventing the flow of water through the skin and allowing vapors to pass through it (1). The skin is composed of two layers of different origin, that is, it is an organ of dual origin, as its surface components (the outer layer) is a layered epithelium called the epidermis, which is specialized from the general ectoderm, which is not involved in the formation of the nervous system. As for the inner layer, it is the dermis, which is a fibrous supportive layer that arises from the mesoderm (the mesenchyme). These two layers are separated by a thin basement membrane composed of a homogeneous polysaccharide acellular substance (2).

The beginnings of these two layers approach for the first time, during the stage of gastrulation, and then they adhere strongly and overlap with some of the two components of the skin. The skin and its appendages perform multiple functions, as it protects the body from wounds and chemical, physical and life influences, and it also helps in the process of thermoregulation by the glands attached to it. The structures attached to it, such as scales, feathers, hair, beaks, nails and horns, all perform multiple and specialized functions. As for the dermis layer, it arises from the embryonic ectoderm from a single layer of cubic cells, but it begins with the addition of a second layer (3).
The origin of the fibrous layer of the skin was traced back to the proliferating cells from the side walls of diploid obese. Hence, this area of the obese was called the dermis or the dermal lamina, and the connective tissue does not extend far from the obese. (4).

The skin of birds is histologically composed of two main layers, the epidermis and the dermis, and the epidermis, which is the outer layer that is in contact with the external environment and consists of the meristem (basal) layer that separates from the dermis through a basal lamina. Similar to the spiny layer of mammalian skin. These cells move toward the surface of the skin and flatten to form the transitional layer, which occupies the same location as the granular layer in mammalian skin. (5)

The epidermis is a non-vascular area devoid of blood vessels as it is nourished by diffusion, and the dermis is between the epidermis and the subcutaneous tissues. (6) This layer consists of connective tissue, and the dermis can be divided into the superficial and deep layers, the deep layer in turn is divided into the free layer and the compacted layer, the loose layer (the deepest) is attached by a rubbery plate to the subcutaneous tissue. This layer contains smooth muscles. (7)

Materials and working methods

Samples were collected from 120 fertilized eggs and placed in the incubator at a temperature of 37 °C. The samples were divided into two groups The first group, which is a control group, consisted of 60 fertilized eggs The second group consisted of the experimental group, with 60 fertilized eggs Samples were taken within 7 days of the incubation period for histological study, (7) and the necessary steps were taken to prepare histological slides, according to. (8)

Results

The epidermis consists of two layers, the epidermis and the dermis, which are of different origin, where the epidermis layer consists of a stratified squamous epithelium consisting of one layer and then multiplies into two layers and it arises from the ectoderm, while the dermis layer consists of soft connective tissue and contains small blood vessels and nerves and this layer is more thicker", which arises from the mesoderm. As shown in the picture No. (1), the epidermis layer notices a non-vascular area devoid of blood vessels as it is nourished by diffusion

This study shows that the formation of the indentations is similar to the composition of the skin, as it consists of epithelial tissue in the epidermal layer, but it is thicker than the skin in other areas, while the dermis layer consists of soft connective tissue and blood vessels. As shown in figure (2), the dermis is located between the epidermis and the subcutaneous tissue. This layer consists of connective tissue, and the dermis can be divided into the superficial and deep layers, the deep layer in turn is divided into the free layer and the compacted layer, the loose layer (the deepest) is attached by a rubbery plate to the subcutaneous tissue. This layer contains smooth muscles
Discussion

The skin of birds consists of two layers of different origin, meaning that the skin in the ratchets is of double origin (9). As its surface components (the outer layer) is a layered epithelium called the epidermis that arises from the ectoderm after the formation of the neural canal and does not enter the formation of the nervous system (10). The epidermis in the drooping region consists of the ectoderm (11) and the epidermal layer in the droops
consists of a basal layer with columnar cells that protrude above the dermis region and this is consistent with (12).

The dermis, it is irregular in shape and contains a middle layer and its cells are multi-shaped, and this agrees with (13). A thin basement membrane separates between these two layers and it consists of a homogeneous acellular substance (14). And notice the epidermis, which consists of one single layer of cubic cells and then start adding the second layer after several days, (15) the dermis consists of a fibrous layer and connective tissue (16)

CONCLUSIONS

In this study, we conclude the following wattles are made up of two layers, the epidermis and the dermis Two layers are created in the area of the pendants from two different sources. The tissue components of the pendants are the same as the tissue components of the skin, but differ from it in the thickness of the layers and more blood vessels.

References


