Dermis Encyclopedia Article

Dermis

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Dermis

The middle distinct layer of skin is called the dermis or corium. Anatomically, this layer can be divided into papillary (upper) and reticular (lower) layers. The papillary layer is thrown in folds that produce skin ridges found on the hands and feet. The thickness of the dermis can range from 0.04 in. (1 mm) on the eyelids to 0.16-0.2 in. (4-5 mm) thick on the back. The dermis functions in to maintain **temperature regulation** (thermoregulation) and supplies the avascular **epidermis** with nutrients. It contains sensory nerve endings for **pain**, structures called Meissner's corpuscles (tactile receptors) and a rich **blood** supply. The sebaceous (oil) and shorter **hair** follicles originate in this layer. The dermis is composed of connective **tissue**, cellular elements and ground substance.

The connective tissue of the dermis consists of collagen, elastic, and reticular fibers. These fibers contribute to the elasticity and strength of the skin. Under the electron microscope, the collagenous fibers are observed to be composed of thin, non-branching fibrils held together by cementing ground substance. These fibrils are composed of covalently cross-linked and overlapping units called tropocollagen molecules. Collagenous fibers are responsible for one fourth of man's overall protein mass. The elastic fibers are seen to be thinner than collagen fibers and are entwined among them. They are composed of the protein elastin. Reticular fibers are thought to be immature collagen fibers since their chemical and physical properties are similar. Reticular fibers are sparse in normal skin but abundant in pathological conditions of the skin associated with syphilis, sarcomas and lymphomas.

The cellular elements consist of fibroblasts, histiocytes, mast cells, polymorphonuclear **leukocytes**, eosinophic leukocyte, and lymphocytes. Fibroblasts form collagen fibers and may be the creating base (progenitor) of all other **connective tissues**. Histiocytes can (under pathological conditions) form macrophages that phagocytize **bacteria** and other foreign matter. Mast cells play a role in the inflammatory response to injury of the skin as do the lymphocytes. Polymorphnuclear leukocytes and eosinophilic leukocytes occur quite commonly with various dermatosis, especially those with an allergic source (etiology).

The ground substance of the dermis is a gel-like amorphous (shapeless or shape changing) matrix of physiological importance because it contains proteins, mucopolysaccharides, soluble collagens, **enzymes**, immune chemicals, metabolites and many other substances.