

SYNETETIC SKIN

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March 18, 2004
Biomed seminar ELE 282

Skin is human body's largest organ which protects the body from disease and physical damage. It is made up of two layers called the epidermis (outer layer) which is composed of keratinocytes, melanocytes and the dermis composed primarily of connective tissue fibers such as collagen. Damage to the skin would destroy all of the skins functions and structures.

Because of burn damage scientists have been trying to construct a structure that would duplicate skin and its functions. Up until recently the best they had was using a "cover": cadaver skins or animal skin. But the body would reject both of these options within a few days and the surgery needed to be performed again.

Luckily, a new synthetic product called Dermagraft-TC became available to doctors and patients. Dermagraft-TC is made from living human cells and it is being used instead of the old techniques of using cadaver skin. This FDA approved burn dressing could be used to affectively treat third-degree burns unlike prior ways which could only deal with second degree burns. These dressings promote healing by interacting directly with body tissues. The interaction causes the dressing to adhere better, forming stronger protective layer. This discovery decreased wound care time and pain while increasing autograft take. It also decreased incidence of epidermal sloughing.

From the discovery of Dermagraft-TC Integra was produced. Integra is a two-layered dressing. The top layer

serves as a temporary synthetic epidermis and the bottom layer serves as a foundation for re-growth of dermal tissue. The underlying layer is made of collagen fibers that act as a lattice through which the body can begin to regenerate its own dermal tissue.



Artificial skins are only a temporary fix and a

patient will still need skin grafts. But with their use a thinner skin graft is used, which allows the donor's site as well as the patient to heal faster with fewer surgeries. They existence is also valuable since they are designed to leave behind the patients owe skin eliminating the problems of the old techniques for instance the skin being rejected by the body.

This advancement in science could lead to the pioneering of other organ reconstructions. It is hoped that this so-called engineered structural tissue could someday even replace plastic and metal prostheses currently used now to replace damaged joints and bones. If improved it could also be used as a means of "plastic" surgery. As of now scientists are only skeptical but believe the possibilities may be endless.

www.advoctehealth.com

www.smith-nephew.com

www.gale-edit.com

www.rpi.dept/chem-eng/biotech-environ/tissue/tissue.htm