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Estrogen is a Major Regulator of Cutaneous Wound Healing by MIF Regulation

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Estrogen is a major regulator of wound repair that can reverse age-related impaired wound healing in human and animal models, characterized by a dampened inflammatory responses and increased matrix deposited at the wound site. Macrophage migration inhibitory factor (MIF) is a candidate proinflammatory cytokine involved in the hormonal regulation of inflammation. We demonstrate that MIF is upregulated in a distinct spatial and temporal pattern during wound healing and its expression is markedly elevated in wounds of estrogen-deficient mice as compared with intact animals. Wound-healing studies in mice rendered null for the MIF gene have demonstrated that in the absence of MIF, the excessive inflammation and delayed-healing phenotype associated with reduced estrogen is reversed. Moreover, in vitro assays have shown a striking estrogen mediated decrease in MIF production by activated murine macrophages, a process involving the estrogen receptor. We suggest that the estrogen inhibits the local inflammatory response by downregulating MIF, suggesting a specific target for future therapeutic intervention in impaired wound-healing states.

D106

Distribution of Mercury in the testis, Efferent Ductule and Epididymis of Male Mice

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Distribution of methyl mercuric chloride was investigated in the testis, efferent ductule and epididymis of male mice. Each mouse in the mercury treated group was orally administered with 30 mg methyl mercuric cholide in 1,000 ml of distilled water for 100 days. On the day of examination, mice were anesthetized with sodium pentobarbital and were intranscardially perfused with a fixative containing 4% glutaraldehyde in 0.1 M phosphate buffer. Testes, efferent ductule and epididymides were removed, dehydrated in a series of ethanol, embedded in glycol methacrylate and cut into 3 ㎛ thickness. Sections were exposed to an autometallographic developer and examined with a microscope. Mercury was observed in Leydig and Sertoli cells in testis, but not in germ cell. In the efferent ductule, mercury was distributed in the cytoplasm of epithelial cells. In the epididymis, mercury compounds were observed in the cytoplasm of narrow and basal cells, but not in the principal cells of the initial segment. In the corpus and caudal epididymis, the compouns were observed in the basal region of principal cells.

D107

Morphometrical Differences in SLPI (Secretory Leukocyte Protease Inhibitor) Deficiency Mice during Wound Healing

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Secretory leukocyte protease inhibitor (SLPI) is a serine protease inhibitor with anti-microbial properties found in mucosal fluids. It is expressed during cutaneous wound healing. Impaired healing states are characterized by excessive proteolysis and often bacterial infection, leading to the hypothesis that SLPI may have a role in this process. We have generated mice null for the gene encoding SLPI (Slpi), which show impaired cutaneous and oral wound healing with increased inflammation and elastase activity. At the tissue level, the ability of this 12 kDa protein is to counteract the excessive degradation of functional and structural proteins such as collagen and fibronectin. Moreover, since wound healing in the oral cavity occurs more rapidly and with minimal scarring compared to the skin. To investigate the role of SLPI in skin and oral how it contributes to tissue repair. We have performed wound experiment both skin and oral tissue with morphometrical analyses. This work was supported by grant NO. R08-2003-000-10279-0 from the Basic Research Program of the Korea Science & Engineering Foundation.

D108

A Comparative Study of the Structure and Vascularization on the Regional Epidermis of an Amphibious Mudskipper Fish, *Periophthalmus magnuspinnatus* (Gobiidae, Pisces)

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We observed the structure of 14 different regional epidermis (8 parts of the body surface and 6 fins) of *Periophthalmus magnuspinnatus*, and compared the relation between the surface area of the epidermis and the respiratory area of the capillary vessel as well as the difffusion distance by region. Bascially, the epidermis consisted of three layers- the outermost layer, middle layer and stratum germinativum. Extensive vascular capillary networks are present near the superficial layer of epidermis and outermost layer. The middle layer consisted of small or voluminous cells swollen by epidermal cells. Due to the swollen cells, the thickness of the epidermis increased and the epidermis appeared a web-like. In the 14 regional epidermis, the value of the respiratory area was the lowest in the anal fin (mean 58.0 ㎛) and the highest in the upper jaw (mean 291.1 ㎛). In the value of the diffusion distance, the dorsum had the lowest value (mean 2.5 ㎛) and the anal fin had the highest value (mean 26.0 ㎛).