EDITORIAL

INTERLEUKIN-31: A NEW CYTOKINE INVOLVED IN INFLAMMATION OF THE SKIN

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Cytokines affect immune functions involved in motility, chemotaxis, phagocytosis, cytotoxicity and antigen presentation (1). Interleukins (IL) are pleiotropic cytokines with diverse receptor signaling pathways whose expression is controlled at multiple levels (2). Interleukin receptors (ILR) have intrinsic roles in regulating and amplifying the inflammatory response (3-12).

Skin is the largest organ of the body with the specific immune defense and its inflammatory conditions include atopic dermatitis, allergies, psoriasis etc. (13-19). Infiltrated lymphocytes proliferate in an activated state in the skin lesion in an autocrine and/or paracrine manner and produce TH2-type cytokines that might evoke immunologic abnormalities (20-23). The skin lesion is characterized by massive infiltration of mononuclear cells including $CD4^+$ T helper cells and mast cells (24-27). Several cytokines exhibit the capacity to induce T cell response (28-30). It has been reported that GM-CSF plays an important role in the development and perpetuation of atopic dermatitis (31). In addition, psoriasis is regarded as a type-1 T cell-mediated, chronic inflammatory skin disease where IL-15 triggers inflammatory cell recruitment, angiogenesis and production of other inflammatory cytokines (32-33). Interferon-gamma (IFN-gamma), TNF-alpha and IL-17 are up-regulated in psoriatic lesions. Transforming growth factor- alpha (TGF-alpha) is also highly expressed in the suprabasal layers of epidermis where neutrophils tend to collect in psoriatic lesions. Moreover, increased expression of IL-23, a cytokine which shares the p40 chain with IL-12, is found in psoriatic lesions (34-39).

IL-31 is a newly described immunoregulatory cytokine that is mainly produced by activated TH_2 cells. IL-31 acts through the heterodimeric receptors IL-31R A and oncostatin receptor (OSMR) which are expressed on IL-31 activated monocytes and expressed on epithelial cells and keratinocytes respectively. Recently

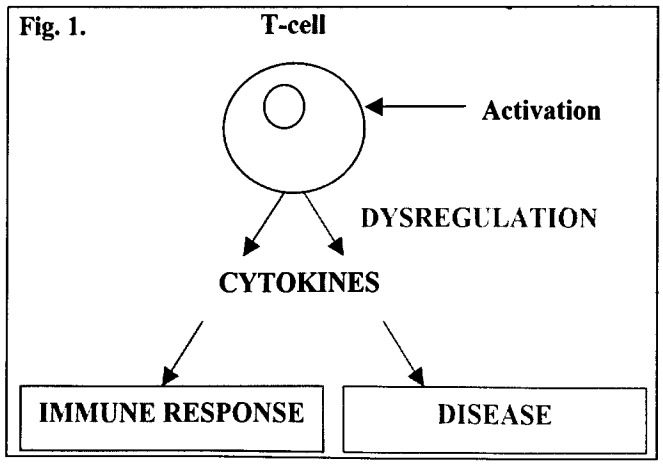

Fig. 1.

Key words: cytokine, IL-31, inflammation, dermatitis, T cell response

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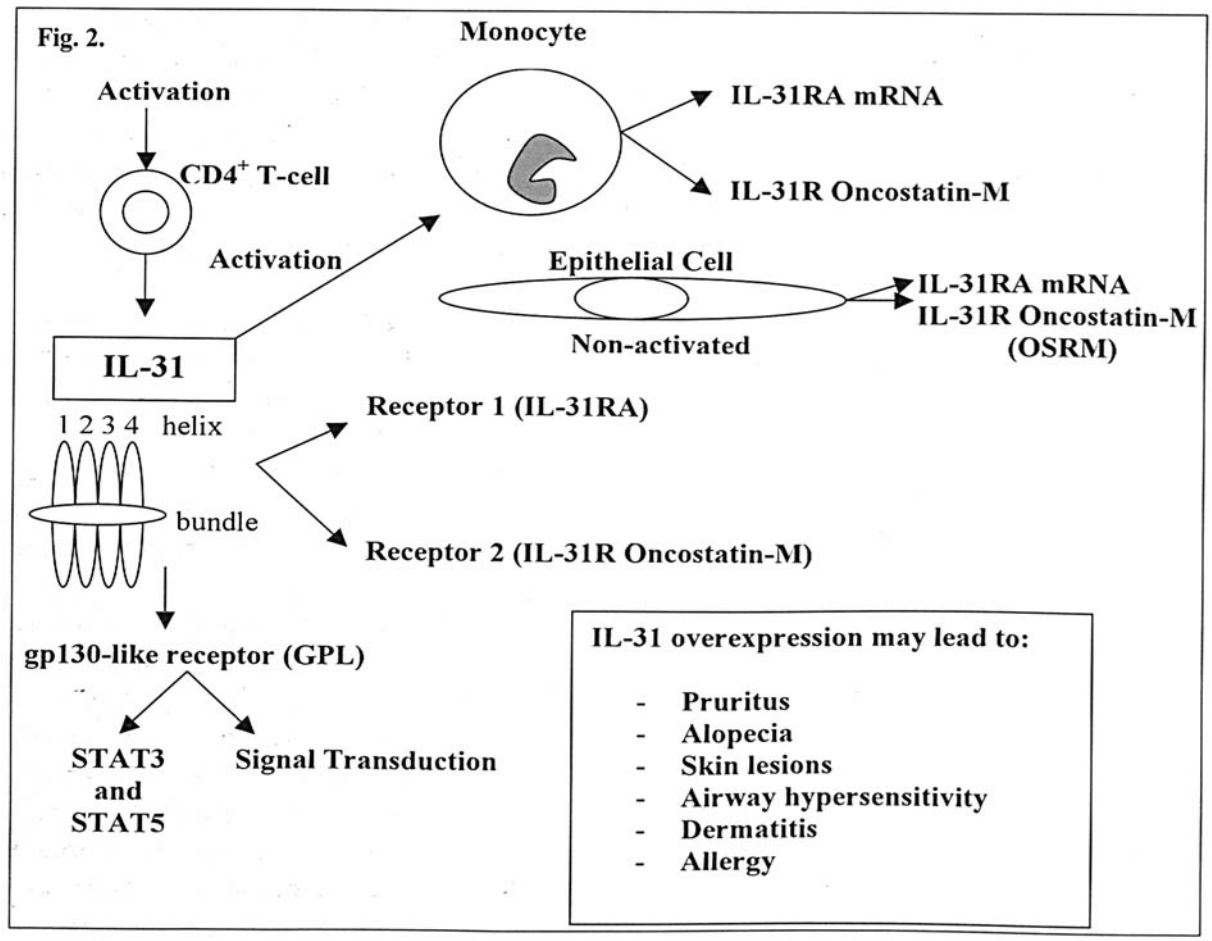

it has been found that IL-31 is involved in dermatitis, pruritic skin lesions, allergy and airway hypersensitivity. IL31R A is highly homologous with the gp 30-like receptor (GPL), which mediates signal transduction and activate the signal transducer and activator transcription factor 3 (STAT3) and 5 (STAT5). It has been reported that $CD4^+$ T cells are a very important source of IL-31. Since the development of dermatitis is mediated by gamma delta T cells, it is likely that IL-31 is involved in the proliferation and activation of these cells in skin diseases.

IL-31 is an important player of T cell mediated immune response and underlines the important implications of this cytokine in inflammation and degenerative skin diseases.

The involvement of IL-31 in dermatitis offers the potential of serving as a useful tool for investigating the immunological role of cutaneous gamma/delta T cells. The importance of IL-31 as a mediator of the skin inflammatory diseases is not known; however, we believe that a single cytokine may not explain the pathogenesis of dermatitis.

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