Petasites japonicus Extract - Phytotherapy for Sensitive Skin

A Natural Anti-Histamine/Anti-Leukotriene Plant Extract

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Abstract

Through folkloric references and recently in more current scientific literature, it has been reported that extracts of *Petasites japonicus* (Butterbur) might have a controlling effect in smooth muscle cells, as a relaxant (anti-spasmodic), anti-allergy, and pain reliever (analgesic). Published data has also suggested that extracts from Butterbur have been beneficial in reducing migraine pain. Extracts from the leaves and roots have been used since ancient Greek times as an anti-inflammatory.

The search for components in Butterbur Extract that contributed to an inhibitory activity on mast cell degranulation was guided principally by the inhabitation of hexsosaminidase release. Sesquiterpenes [petasins], polyphenolic compounds [Fukinol, Fukinolic acid], and triterpene glycosides were isolated as the active components that were responsible for the inhibition of mast cell degranulation. On the basis of its inhibition of mast cell activation and direct smooth muscle reaction induced by released mediators, Butterbur Extract was found to suppress type I allergic reactions.

In this early paper, efforts to develop an extract from *Petasites japonicus* (Butterbur) will be discussed. The inhibitory benefits of the extract on mast cell degranulation was tested to determine the ability for the extract to reduce histamine release levels compared to an antihistamine drug, cromlyn sodium. *In vivo* human assays to examine the ability of the extract to reduce erythema and inflammation due to chemical irritancy will also be examined.

Introduction

The prevalence of people who have self-assessed "sensitive" skin is significant and epidemiological studies suggest that the problem crosses ethnic and gender lines.[1-3] Unfortunately, because skin sensitivity is so closely tied to the brain it is often difficult to accurately define exactly what it means when one suggests that they have sensitive skin.

The processes by which the skin responds to external threats are complex and multifaceted (Figure 1). Depending on the nature of the threat, the response can be subtle, such as light redness or itching, to significant with major skin eruptions, blistering and even possibly infection.[4-5] These varying responses are principally the result of the host cells and chemicals the body brings to bear on a potential threat. For instance, the body may respond to a mild surfactant treatment with development of faint redness (erythema) and possibly some itching. On the other hand, exposure to the allergen urushoil which is found in many plants such as poison ivy and poison sumac can cause a significant immune response (contact hypersensitivity) with formation of blisters, severe itching and swelling.[6]

In the allergy process (called allergic contact dermatitis), potential allergens are first recognised by special immune cells such as T-cells and B-cells that are activated by Langerhan cells in the skin's lymph system. In response to the allergen, the B- and T-cells will produce IgE antibodies which recognise the specific allergen. These IgE antibodies are then released by these cells and will bind to specific receptors on the surface of mast cells. Mast cells are histamine containing immune cells, and when they are bound to IgE antibodies they become sensitised to that specific allergen. When exposed to the allergen for a second time, the allergen will bind to the IgE antibodies already bound to the mast cell, which triggers a sequence of events that results in the release of histamine from secretory granules located within the mast cell. It is the local effect of this released histamine that is responsible for the systemic symptoms associated with allergic responses.

This process is subtly different to the irritation and inflammation that is associated with more common irritant contact dermatitis (ICD). Here, aggressive chemicals, solar radiation and other irritating events cause degradation of cutaneous keratinocytes, mast cells and nerve cells just below the surface of the skin. Typically, irritant dermatitis does not involve a significant