

What are the causes of sensitive skin?

SKIN SENSITIVITY

FOCUS

SENSITIVE SKIN IS CLINICALLY DEFINED BY CHARACTERISTIC SENSORY PERCEPTIONS INCLUDING :

- Tightness
- Burning
- Pain
- Pruritus
- Abnormal stinging
- Tingling



Although often transient, and in many cases unaccompanied by visual dermatological responses, sensitive skin affects the quality of life. In some patients, an extensive erythema follows induction of the symptoms occurring along with or independently of an atopic predisposition. Some may present with patchy erythema, dry skin or scaling.¹

Although sensitive skin was initially believed to be an abnormal reaction to common products and occurred in only small subset of consumers,

Epidemiological surveys consistently find a high prevalence of sensitive skin across the industrialized world.

The majority of women in the USA, Europe, and Japan (which represents the vast majority of patients queried to this date) now believe that they have sensitive skin.² Rates of skin sensitivity have increased steadily over time, particularly among men.³

Sensitive skin, although now largely recognized as a genuine phenomenon of physiological origin, is still a subjective complaint with no consistent associations, no likely aetiologies defined, no predictable or classical visible signs of irritation, no immunological verifiable response, and no accepted and reproducible diagnostic test. Although it is clear that specific individuals have heightened sensitivity to different kinds of sensory and physical irritants, **observed reactions are not predictive of generalized sensitivity**, and the relationship between observed sensitivities is unclear.⁴

What are the factors in Skin Sensitivity?

Evidence suggests that **sensitive skin may not be a single condition, but one that encompasses different categories of subjects and sensitivities based on different mechanisms – not a single entity, but a heterogeneous phenomenon.** Multiple aetiologies would not be farfetched, as the nervous system does not act in isolation but is interdependent with both the immune system and the skin, sharing numerous cellular contacts as well as the same language of cytokines and neurotransmitters. All three interact to affect cutaneous responses.^{4,5}

A majority of sensitive skin sufferers report unpleasant sensory responses to:

- Cold temperatures
- Wind, sun
- Pollution
- And heat.

The lower temperatures and humidity characteristic of winter cause lower water content in the stratum corneum. Air conditioning is reported as a trigger for sensitive skin, and **the frequency of sensitive skin in women was observed to be significantly higher in summer than in winter (71.2% in July versus 59.39% in March).**^{4,6}

The face is the most common site of skin sensitivity. Factors contributing to facial sensitivity are likely the number of products used on the face (particularly in women), a thinner barrier in facial skin, and a plentitude of nerve endings as well.⁷



POSSIBLE CONTRIBUTORS TO SENSITIVE SKIN⁴

Female sex

Hormonal status

Cultural expectations in technologically advanced countries

Fair skin which is susceptible to sunburn

Susceptibility to blushing and/or flushing

Skin pigmentation

Thin stratum corneum

Decreased hydration of stratum corneum

Disruption of stratum corneum

Decreased barrier function

Increased epidermal innervations

Increased sweat glands

Increase neutral lipids and decreased sphingolipids

Decreased lipids

High-baseline TEWL (transepidermal water loss)

Atopy

What's to be done in practice currently?

Part of the reason for the observed breakdown between sensory effects and objective signs is the fact that an objective sign like erythema is the end result of a complex, multistep physiological process. Numerous underlying processes (e.g. changes in blood flow, moisture content, pH) would be expected to occur before the appearance of visible external changes.⁸

Methodology is needed, which could increase the ability to predict and quantify these subjective patient responses. Three possible approaches include the following:⁸

Exaggerating testing conditions to elicit corroborating physical findings

Increasing the sensitivity of assessment of physical findings

Identifying methods to quantify sensory end-points

Data continue to accumulate which suggests a link between atopy and sensitive skin.

In a survey-based assessment of 1039 individuals (83.6% female)

Subjects who claimed overall to have sensitive skin were:

5 X likely to report that they had skin allergies which had been confirmed by a doctor (P < 0.0000)

> 3.5 X more likely to have relatives with sensitive skin. than those without sensitive.⁹

Sensitive skin is also predominantly sensory in nature and thus ultimately a neurological disorder:

Sensory differences may be related to innervation. Dermal nerve fibres extend throughout viable epidermis as free nerve endings, but the epidermal component of this network is still poorly characterized. Epidermal nerve density variation could explain the different sensitivity thresholds in various anatomical sites. Hyperreactivity of the neural response of the skin is postulated to play a role. Possible mechanisms for neural system hyperreactivity include nerve fibres; endothelin receptors; burn, itch, and heat receptors; cold receptors; and neurophins.⁴

What's to be done in practice tomorrow?

Subclinical irritation may be the key to understanding sensitive skin, as sensations elicited by product exposure are generally discerned long before observable differences. One significant advance in methodology with the potential to greatly increase understanding of sensitive skin is the development of new, non-invasive techniques (like crosspolarized light-enhanced visualization), which has yielded results that show good correlation with sensory perceptions and which provides the ability to measure subclinical damage.⁴

An immediate need is to build on what is known with improved techniques, carefully crafted protocols that evaluate appropriate exposures and study populations, and rigorous methodological and statistical procedures, bringing the study of sensitive skin out of the realm of fairy tales and into the realm of a genuine physiological disorder worthy of focused research.

The challenge of the future is to unravel the biological link between subjective clinical signs and their physical sequelae as a means to develop appropriate diagnostic criteria as well as to understand the aetiology of this still largely mysterious disorder.⁴

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