

Shoes or no shoes, that is the question.

Humans were born to walk barefoot; ideal situation for a perfect foot thermoregulation.

1 Thermoregulation function

The plantar and dorsal surfaces of our feet are full of eccrine glands; the primary source of feet **perspiration**.

250,000 sweat glands that help the body to maintain the correct temperature. A foot can produce approximately half a pint of perspiration in a day.

2 Perspiration composition

Perspiration is a solution that contains salts, vitamins, glucose, lactic acid, urea and **amino acids** such as leucine, isoleucine and valine. Perspiration is odourless!

These organic molecules are also liberated through the bacterial degradation of proteins, mainly keratin, naturally present in the exfoliated layers of stratum corneum, a degradation induced directly by perspiration.

3 Bacteria & amino acids: a chemical reaction

Bacteria inhabiting the foot skin flora attack these amino acids and transform them into **volatile fatty acids (VFAs)**.

VFAs are the fatty acids that generate the offensive foot odor.

Propionibacterium spp, Kytococcus spp, Staphylococcus spp, Corynebacterium spp, mainly found on the plantar area and between toes.

Bacteria metabolize amino acids to VFAs: leucine is converted into isovaleric acid, isoleucine into butyric acid and valine into isobutyric acid.

4 No shoes = No foot odor

If a person is barefoot, the consequences of this absolutely normal chemical reaction are minimal and the number of VFAs produced is very low.

- > A barely noticeable odor
- > **No offensive odor/acid notes are generated**

When does odor become detectable?

Whenever we wear synthetic shoes.

