Antiperspirant vs Deodorant

Human skin is covered with two types of sweat glands. Eccrine glands, covering about 95% of the skin surface, primarily secrete a watery sweat to regulate body's temperature by way of evaporation. The sweat itself is odorless, and contains no substance of use for bacteria that live on any healthy skin.

Apocrine glands (also known as scent glands), however are located only in armpits, ear, navel, nipple, and genital areas and produce sweat that contains organic compounds that are attractive to bacteria. The bacteria feed on the apocrine sweat and on dead skin & hair cells releasing an isovaleric acid (3-methyl-2-hexenoic) which has a strong “sweaty” smell.

The two most commonly used products to prevent that smell are antiperspirants and deodorants.

Modern antiperspirants, patented by Jules Montenier of Chicago on January 28, 1941, are usually made from aluminum-based compounds designed to interact with the keratin fibrils (fine fibers about 1nm in diameter; i.e. one-tenth of a typical human hair) in the sweat ducts to form a physical plug that prevents sweat from reaching the skin's surface. These chemically-induced plugs are removed over time by the natural shedding of the skin. Aluminum compounds used most frequently in antiperspirants are:

(i) Aluminum Chloride (Brand Example: Certain Dri)
(ii) Aluminum Chloro.hydrate (Example: Arrid XX, Ban, Soft & Dri, Suave)
(iii) Aluminum Ses.qui.chloro.hydrate (Example: Almay, Mitchum)
(iv) Aluminum Zirconium Tri.chloro.hydrex Gly (Example: Degree, Secret, Sure)
(v) Aluminum Zirconium Octa.chloro.hydrex Gly (Example: Dry Idea, Secret)
(vi) Aluminum Zirconium Tetra.chloro.hydrex Gly [1] (Example: Adidas, Dove, Lady Speed Stick)

[1] Cause of the yellow “armpit stain” on clothing

First commercial deodorant was developed and patented in 1888 by an unknown inventor in Philadelphia. Deodorants are usually alcohol-based and reduce body odor by temporarily killing the bacteria. Most deodorants contain one or several of the following ingredients:

(i) Behenyl alcohol, also known as Docosanol, a saturated fatty alcohol
(ii) anti-microbials that are more potent than alcohol such as Triclosan which has an ability to create resistant bacteria
(iii) Steareth-100 that is a waxy compound and a polyethylene glycol ether of stearic acid - derived from vegetable oil but typically processed with ethylene oxide, listed as known human carcinogen by the International Agency for Research on Cancer
(iv) Parabens (methyl, propyl, benzyl, ethyl,and butyl) used as a preservative in many cosmetics for their bactericidal and fungicidal properties. According to the European Scientific Committee on Consumer Products the available data on parabens do not enable a decisive response to the question of whether some parabens can be safely used in cosmetic products at individual concentrations up to 0.4%, which is the allowed limit in the EU
(v) Fragrances or essential oils - to mask the odor of sweat - which can cause skin irritation and contact dermatitis in a small percentage of the general population

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