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OVER-THE-COUNTER AND PRESCRIPTION DEODORANTS AND ANTIPERSPIRANTS

Even though summer is over we will continue to sweat. That's because perspiration is crucial to keeping our bodies cool year-round. As sweat evaporates it pulls heat energy away from our bodies. Sarah Everts, in her new book, *The Joy Of Sweat, The Strange Science Of Perspiration*, explains, "Our bodies can't help but exude heat even in a state of utter relaxation because our cells are workaholics, diligently dealing with the never-ending to-do list involved in keeping us alive: breaking down nutrients, shuttling oxygen around, building hormones, copying DNA, fighting pathogens." Staying cool is as critical to our continued existence as breathing. And how do we do that? We perspire.

However necessary it may be to our biological health, there are social disadvantages to sweating. While we can hold back other bodily functions, at least temporarily, we can't do that with sweat. Over the centuries people have attempted to deal with the undesirable aspects of sweat in many ways. Prior to the understanding that sweat odor is caused by microorganisms, people relied heavily on frequent cleansing and perfume to mask the odor of sweat. But in the latter part of the 19th century and early in the 20th century, as the role of bacteria and other organisms were discovered to be the culprits causing body odor, experimenters, chemists, and entrepreneurs joined the fight against unwanted body odor by dabbling with various chemicals, including vinegar, baking soda, and zinc oxide, none of which worked very well. By 1903 patented products were using aluminum salts. Variations of aluminum combined with fragrances and numerous other chemicals make up the active ingredients in deodorants and antiperspirants today.

Although we commonly refer to deodorants or antiperspirants by one or the other name, there is a significant difference between a deodorant and an antiperspirant, the difference is both functional and legal.

Deodorants. The Federal Food, Drug, and Cosmetic Act defines cosmetics by their intended use, as "articles intended to be rubbed, poured, sprinkled, or sprayed on, introduced into, or otherwise applied to the human body for cleansing, beautifying, promoting attractiveness, or altering the appearance." Deodorants are included in this definition. Since deodorants are not intended for therapeutic use, such as treating or pre-

venting disease or to affect the structure or function of the body, they are not considered drugs. *Deodorants* are considered *cosmetics* under the law, therefore they are not required to have FDA approval before they go on the market.

Deodorants have relied on the combination of two ingredients, a fragrance, and an antiseptic. *Fragrances* mask the odor of sweat and *antiseptics* kill bacteria. However, deodorants took a big hit in 2016 when the FDA banned *triclosan*, *triclocarban*, and 17 other antibacterial chemicals that were often used in deodorants and other personal care products for lack of safety data. These chemicals have also been shown to contribute to the problem of bacterial resistance to antibiotics in humans. So currently, deodorants on the shelves at supermarkets and drug stores are nothing more than fragrances. Some deodorants will make claims that the product will last all day, or even give "48-hour protection." But since deodorants are not drugs these claims do not have to be proven prior to marketing. The bottom line is that if the product does not make an "antiperspirant" claim on the label and is simply labeled as a "deodorant", most likely it is nothing more than a pleasant-smelling fragrance. The "protection" offered is a perfume or fragrance that will mask body odor a little longer throughout the day. Yet most of the time that may be all you need.

Antiperspirants. Antiperspirants are a type of deodorant because they do stop body odor, but they also "affect the structure or function of the body" (stop sweat glands from producing sweat), and consequently, since the 1970s they have been regulated as *non-prescription "cosmetic" drugs* by the FDA. This is similar to other OTC cosmetic drugs, such as fluoride toothpaste, dandruff shampoos, and sunscreens. Antiperspirants are much more effective than simple deodorants in reducing body odor whether they are scented or not. That's because these drugs work by clogging up your sweat ducts so that no perspiration can get to the surface where bacteria can break down sweat to cause odor. Unfortunately, the only chemicals that do this well contain *aluminum*. Aluminum is the only sweat-blocking chemical used in all antiperspirants on the market today. Nineteen aluminum compounds are currently approved by the FDA for use in the US. If you use an antiperspirant, you can't get away from aluminum. The good

news is that the type of aluminum used in today's antiperspirants has been modified over many decades to make aluminum salts less acidic. This reduces irritation to the skin and minimizes damage to clothing, making antiperspirants better tolerated for daily use. However, aluminum raises a big public health concern that some of it when applied to our skin is getting into our bloodstream. The worry is understandable because aluminum, like lead and mercury, has no biological role in our bodies. There has been concern that aluminum might be linked to Alzheimer's disease and breast cancer. The few studies that have been done seem to indicate that limited absorption through the skin is well below the amounts of aluminum that we already get in our food, and antiperspirants add no additional burden to the body. The FDA agrees with this position. However, some antiperspirants are required to add a caution on the label that states "Ask a doctor before use if you have kidney disease." This is precautionary because other aluminum-containing over-the-counter (OTC) drugs, like antacids, have caused elevated plasma aluminum levels in patients with kidney disease.

Hyperhidrosis (Excessive Sweating). As many as fifteen million Americans suffer from excessive sweating, a medical condition known as *hyperhidrosis*. People who sweat more while at rest, as well as in response to emotional or physical stress can have negative emotional, social, psychological, and functional effects on their life leading to anxiety and depression. Hyperhidrosis is complicated and may be of more than one type, that is, of unknown cause (*primary hyperhidrosis*), or, it may be related to something else, like medications, endocrine disorders, or disease (*secondary hyperhidrosis*). Primary hyperhidrosis usually begins in children or adolescents. There is no cure for primary hyperhidrosis, but there are many therapies that can help with this disorder. Unfortunately, many times a patient's concern about excessive sweating may be dismissed as anxiety problems. This is frustrating because hyperhidrosis is *not* a cosmetic problem. That's why it's a good idea (if you suspect that you have this condition) to see a specialist, usually starting with a dermatologist. Both OTC and

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prescription drugs are used for treatment. Sweatblock[®], Certain Dri[®], Zerosweat[®], and Drysol[®] are all OTC products for excessive sweating. These all contain *aluminum chloride* in high concentrations. Prescription drugs include Drysol[®] and Xerac AC.[®] These also contain a high percentage of aluminum chloride, but the way the drug is applied may differ from the OTC products (such as dab-on, solution, or wipes so they can be used on hands, feet, or foreheads and face if necessary). While very effective in blocking perspiration, aluminum chloride tends to be more irritating to skin and clothing than the aluminum salts found in most OTC products. Prescription medi-

cines, Botox, electrical devices, and even nerve surgery have also been used when prescription antiperspirants fail to help with hyperhidrosis.

Summary. If you need a short-acting cover-up for mild perspiration odor use a deodorant after a shower or before dressing. They aren't much more than fragrance. But remember, a deodorant won't stop you from sweating. If perspiration odor is a significant concern for you, an antiperspirant will help. It keeps the sweat glands from producing perspiration by blocking them with a chemical plug. As unappealing as this sounds, it is very effective. Antiperspirants will also work to prevent sweating and body

odor much longer than deodorants and are considered OTC drugs by the FDA. Many consumers worry because antiperspirants contain aluminum. The FDA says it does not have any evidence or data that aluminum in antiperspirants is related to any health issues, including Alzheimer's Disease and cancer. But again, if aluminum worries you, use a product that does *not* make an "antiperspirant" claim on the label. Finally, excessive sweating, known as hyperhidrosis, is a medical issue and will require the help of a physician. Numerous therapies are available and it may take time to find one that works for you.

TYPICAL DEODORANTS AND ANTIPERSPIRANTS ON PHARMACY SHELVES

Brand Name	OTC/Rx	Ingredient(s)	Comments
Thai Crystal [®] Deodorant Mist	OTC	Potassium aluminum sulfate (alum)	Deodorant and antiseptic. Manual pump. Alum kills bacteria and odor and won't form a chemical plug in sweat glands, making absorption of this aluminum salt even more unlikely. Sold at Whole Foods.
Degree Men [®] Deodorant	OTC	Fragrance, stabilizing agents, no aluminum.	Deodorant only. Claims 48-hour protection against odor due to fragrance "time release molecules."
Secret [®] Deodorant	OTC	Fragrance, drying agents, stabilizing ingredients. No aluminum.	Deodorant only.
Arm & Hammer Ultra Max [®] solid	OTC	Aluminum chlorohydrate 19%, fragrance, drying agents.	Antiperspirant / deodorant
Dry Idea Advanced Dry [®]	OTC	Aluminum zirconium octa-chlorohydrate GLY 16.4%.	Antiperspirant. Claims to be hypoallergenic.
Sweatblock [®] Antiperspirant	OTC	Aluminum chloride 15%	Antiperspirant wipes. Claims to stop perspiration for "up to 7 day protection per use." Available on Amazon. Generally well tolerated. Can be applied to most body areas.
Certain Dri [®] Roll-on Antiperspirant	OTC	Aluminum chloride 12%	Antiperspirant. Stops perspiration and claims "up to 72-hour" protection. Available at CVS Pharmacy.
Drysol [®] Antiperspirant	Prescription Only	Aluminum chloride hexahydrate 20% (Solution and Dab-on); Drysol Mild, 6.25% Dab-on.	Antiperspirant for hyperhidrosis. Underarm, feet, and hands. Skin irritation reported as common. No proof that it is better than OTC products.
Xerac AC [®] Antiperspirant	Prescription Only	Aluminum chloride hexahydrate 6.25%	Antiperspirant for hyperhidrosis. Lower percent of aluminum chloride to reduce skin irritation. No proof that it is better than OTC products.

References on file

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