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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : A61K 7/32, 7/36	A1	(11) International Publication Number: **WO 00/35413**
		(43) International Publication Date: 22 June 2000 (22.06.00)

(21) International Application Number: PCT/US99/29170

(22) International Filing Date: 9 December 1999 (09.12.99)

(30) Priority Data:
09/212,072 15 December 1998 (15.12.98) US

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(81) Designated States: AU, CA, CN, JP, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: METHODS OF ABSORBING BODY ODORS USING SILICA CONTAINING BODY POWDERS

(57) Abstract

The present invention relates to methods of controlling body odor comprising the application, to skin of odor controlling body powders comprising from about 1 % to about 60 %, by weight of the body powder composition, of silicas, silicates, or carbonates, preferably from about 4 % to about 20 %. The powders of the present invention also have high moisture absorbing capabilities and may be formulated for good skin feel characteristics.

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METHODS OF ABSORBING BODY ODORS USING SILICA CONTAINING BODY POWDERS

BACKGROUND OF THE INVENTION

Human skin secretes substances such as eccrine and apocrine sweat, and lipid-soluble sebum. Skin secretions provide food and a moist environment for microbes to proliferate, which may result in embarrassing body odor and even fungal or bacterial skin infections.

Numerous attempts have been made to control odor through moisture absorption. Odor causing bacteria and fungi often flourish in warm, moist conditions; particularly where they have easy access to nourishment such as skin secretions and skin cell debris. Therefore, attempts are made to deprive the bacteria responsible for body odor of the moist/humid environment they need to proliferate and grow. Such efforts include the use of powders and/or antiperspirants. Powders and powder-based compositions of the prior art may have limited moisture absorption capabilities and therefore, alone are not sufficient in providing day to day body odor control for the entire body. Antiperspirants alone are not useful in a body odor control product for use over the entire body as they may interfere with the body's thermal regulatory process by inhibiting perspiration through the action of astringent salts. Additionally, such salts may be irritating to a large number of users, particularly when applying them to sensitive areas such as the pelvic region.

Numerous other deodorant compositions aimed at combating odor associated with the skin secretions have been described in the chemical and cosmetic literature. These generally are emulsion sticks or suspensoid sticks, but also may be aerosols, roll-ons, pads, pump sprays, and even soap bars. Zeolites such as those marketed under the trade name ABSCENTS by the Union Carbide Corporation and UOP are known odor absorbers. However, zeolites and many known deodorants can cause a "harsh" feel if too much is deposited onto the skin.

Thus, there remains a need for an improved, comfortable method of controlling body odor. It has been discovered that such enhanced and comfortable body odor control can be safely provided to the entire body by applying a composition, which is left on the skin, which incorporates high levels of silicas, silicates, or carbonates into a powder carrier. Additionally, it has been discovered that such silicas, silicates, or carbonates additionally assist in controlling moisture on the skin. Surprisingly, it has also been discovered that body powders having high absorptive characteristics can be formulated to provide powders having good slip/lubricity

characteristics and which do not cause over-drying of the skin. These and other objects of the present invention will become readily apparent from the detailed description which follows.

All percentages, ratios, and parts herein, in the Specification, Examples, and Claims are by weight unless otherwise stated. The term "g", as used herein, means gram. The term "ml", as used herein, means milliliter.

SUMMARY OF THE INVENTION

The present invention relates to methods of controlling body odor comprising the application, to skin of odor controlling body powders comprising from about 1% to about 60%, by weight of the body powder composition, of silicas, silicates, or carbonates, preferably from about 4% to about 20%. The powders of the present invention also have high moisture absorbing capabilities and may be formulated for good skin feel characteristics.

DETAILED DESCRIPTION OF THE INVENTION

The present invention relates to methods of controlling body odor. The composition used in the methods claimed herein comprise dry ingredients preferably having particle sizes of from about 1 micron to about 100 microns; more preferred from about 1 micron to about 60 microns; and most preferred from about 1 micron to about 30 microns. As used herein, the particle size refers to the largest dimension of the particle and to the ultimate (or primary) particles.

The term "occluded skin", as used herein, refers to regions of a human body covered by undergarments, such as the pelvic area, panty-area, and bra-line; and skin-folds or intertriginous regions, where there is continuing skin-to-skin contact.

The term "body fluids", as used herein, means eccrine sweat, apocrine sweat, build up of sensible moisture from transepidermal water loss, vaginal discharge, urine, and mixtures thereof. The phrase "excess moisture", as used herein, means an undesirable and/or unhealthy level of body fluids deposited on human skin. Where undesirable body fluids are from a particular source, the phrase "excess moisture" will be modified to specify those specific body fluids. For instance, the phrase "excess moisture in the form of eccrine sweat", as used herein, refers to an undesirable and/or unhealthy level of eccrine sweat deposited on human skin.

The term "skin feel characteristics", as used herein, means slip, lubricity, coated, and over-drying characteristics.

The term "body odor", as used herein, means odors which are generated as a result of the natural functioning of a human body. Such odors include, but are not limited to, odors produced by microorganisms of the human skin (i.e., bacterial decomposition of skin secretions), urine, or vaginal discharge, and mixtures thereof.

The term "pharmaceutically-acceptable", as used herein, means a powder suitable for topical use on the skin without undue toxicity, irritation, allergic response, and the like.

A detailed description of essential and optional components of the present invention is given below.

ODOR ABSORBERS:

Powders of the present invention comprise odor absorbers. Conveniently, these odor absorbers also aid in reducing excess moisture from skin. As used herein, the phrase "odor absorbers" refers to silicas (or silicon dioxide), silicates or carbonates. The silicates and carbonates are those formed by reaction of a carbonate or silicate with the alkali (IA) metals, alkaline earth (IIA) metals, or transition metals. Preferred are odor absorbers in the form of microspheres and/or ellipsoids.

Odor absorbers useful in the present invention include calcium silicate, amorphous silicas, calcium carbonate, magnesium carbonate, or zinc carbonate, and mixtures thereof. Some specific examples of the silicates and carbonates useful in the present invention are more fully explained in Van Nostrand Reinhold's Encyclopedia of Chemistry, 4th Ed. pp. 155, 169, 556, and 849, (1984), which is incorporated herein by reference. Preferred are synthetic versions of the odor absorbers, particularly in regards to silicas and silicates due to safety risks related to crystalline silica. Synthetic versions are formed by controlled chemical reactions in a manufacturing process rather than using a natural, mined version of these compounds which is then further refined. Synthetic carbonates useful in the present invention can be obtained from various suppliers such as Mallinckrodt or Whittaker, Clark, and Daniels. Examples of synthetic calcium silicates useful in the present invention are Hubersorb® 250 or Hubersorb® 600 available from J.M. Huber.

It is also preferred that the odor absorbers comprise from about 1% to about 60%; preferred from about 2% to about 55%; more preferred from about 4% to about 50%; even more preferred from about 6% to about 35%; still more preferred from about 10% to about 25%; and most preferred from about 15% to about 20% by weight of the body powder composition.

Absorbent powders comprising mainly silicas for odor control are preferred over those powders comprising mainly silicates and/or carbonates for odor control. Silicas preferred for odor absorption include a synthetic amorphous silica available as Silica Gel 123 (Syloid®) from W.R. Grace, and silicas which are in the form of microspheres and/or ellipsoids. Most preferred are silicas which are in the form of microspheres and/or ellipsoids, as they have additionally been found to contribute good skin feel characteristics and efficient moisture absorption. Silica ellipsoids useful in the present invention are available from DuPont as ZELEC® Sil or from KOBO as Silica Shells. Silica microspheres are available from KOBO as MSS-500, MSS 500/3, MSS-500/H, MSS-500/3H, MSS-500/N, and MSS-500/3N, from Presperse as Spheron L-1500, Spheron P-1000, Spheron P-1500, and from US Cosmetics as Silica Beads SB-300 and SB-700. Additionally, where increased flowability of the powder is desired, it is preferred that some of the

silica of the present invention be fumed silica. Fumed silica is available from Cabot Corporation (Cab-O-Sil®) and from Degussa (Aerosil®).

POWDER CARRIER:

The odor absorbing body powders useful in the present invention comprise powder carriers. Powder carriers include but are not limited to cornstarch (topical starch), talc, rice starch, oat starch, tapioca starch, potato starch, legume starches, soy starch, turnip starch, microcrystalline cellulose (for example Avicel®), aluminum starch octenyl succinate (sold by National Starch & Chemical Co. as Dry Flo® Pure, Dry Flo® XT, Dry Flo® PC, and/or Dry Flo ® AF (aluminum free grade)), kaolin, and mixtures thereof. Preferred is cornstarch. These powder carriers typically comprise from about 25% to about 99%, preferably from about 30% to about 80%, more preferably from about 35% to about 75%, and most preferably from about 40% to about 70%, by weight of the body powder. Preferably, where the powder carrier comprises talc, talc comprises less than about 50% by weight of the body powder. Where a body powder is intended for use in the panty area, preferably the powder comprises less than 5%, preferably less than 3%, most preferably, about 0% of talc, by weight of the body powder.

OPTIONAL INGREDIENTS

The following ingredients may be included in the powders used herein to provide other benefits to the user, or to enhance the odor controlling benefit of the powder. However, when adding optional ingredients, it may be useful to consider each individual ingredient's odor as such odor may compromise the effectiveness of the powder.

Skin feel Components: The powder carriers used in the present invention can also be specially formulated to provide good skin feel characteristics, particularly where crystalline, granular, or abrasive ingredients, such as many odor control agents, also comprise the body powder. Specially formulated powder carriers are also important where increased levels of odor absorbers, particularly moisture absorbers which do not have acceptable skin feel, are included in the body powders. The powder carriers of those absorbent body powders which have the good skin feel characteristics often comprise skin feel components. "Skin feel components", as used herein, refers to three groups of ingredients which are 1) stearates and/or fatty acid derivatives, 2) spherical particles, and 3) platelet-shaped particles. It is preferred that the body powders of the present invention comprise one or more of these skin feel components.

Stearates and/or fatty acid derivatives useful herein include metallic stearates such as magnesium stearate or zinc stearate, and similar fatty acid derivatives such as fatty acid esters which possess unctuous, oily characteristics. Examples of fatty acid esters useful herein include palmitates, oleates, laurates, linoleates, myristates, and butyrates. Zinc laurate, magnesium myristate, and zinc myristate are preferred. More preferred are zinc stearate and magnesium stearate. When included herein, stearates and/or fatty acids derivatives comprises from about 0%

to about 40%; preferably from about 1% to about 30%; more preferably from about 3% to about 25%; and most preferably from about 5% to about 20%, by weight of the body powder.

Spherical particles useful herein include nylon, polyethylene, and polytetrafluoroethylene. Preferred is nylon. Examples of nylon include Nylon N-012 from Presperse, and nylons under the tradename Orgasol, from Lipo Chemicals. Polyethylene is available from Equistar Chemicals under the tradename Microthene. These spherical particles comprise from about 0% to about 40%; preferably from about 1% to about 30%, more preferably from about 5% to about 25%, and most preferably from about 10% to about 20%, by weight of the body powder.

Platelet-shaped particles which are useful herein include mica, talc, lauroyl lysine (available as Amihope LL from Ajinomoto), boron nitride, and barium sulfate. Preferred platelet-shaped particles are lauroyl lysine and mica (available as Silk Mica from Rona/EM Industries). Talc provides good skin feel characteristics, but due to safety concerns, particularly when the body powders of the present invention are to be used in the panty region, preferred embodiments of the present invention are essentially talc free. Platelet-shaped particles comprise from about 0% to about 50%; preferably from about 1% to about 47%; more preferably from about 5% to about 45%; even more preferably from about 10% to 40%; and most preferably from about 20% to about 30%, by weight of the body powder.

Preferably, the body powders of the present invention comprise at least one of the above skin feel components in addition to at least one starch. When a body powder comprises one or more of the skin feel components, the starches preferably comprise from about 25% to about 90%; more preferably from about 30% to about 75%; even more preferably from about 35% to about 60%; and most preferably from about 40% to about 50%, by weight of the body powder. Preferred body powders comprise the skin feel components at from about 5% to about 70%; more preferred at from about 10% to about 65%; even more preferred at from about 15% to about 60%; and most preferred at about 20% to about 55%, by weight of the body powder.

Odor Control Agents: The present invention may comprise additional odor control agents such as uncomplexed cyclodextrin, zeolites, carbon odor-controlling agents, sodium bicarbonates, and/or antimicrobial agents for added body odor control.

As used herein, the term "cyclodextrin" includes any of the known cyclodextrins such as unsubstituted cyclodextrins containing from six to twelve glucose units, especially alpha-cyclodextrin, beta-cyclodextrin, gamma-cyclodextrin and/or their derivatives and/or mixtures thereof. The term "uncomplexed cyclodextrin", as used herein, means that the cavities within the cyclodextrin in the composition of the present invention should remain essentially unfilled prior to application to skin in order to allow the cyclodextrin to absorb various odor molecules when the composition is applied to the skin. When included in the present invention, cyclodextrins

comprise from about 0.1% to about 25%, preferably from about 1% to about 20%, more preferably from about 2% to about 15%, most preferably from about 3% to about 10%, by weight of the composition.

A more complete description of cyclodextrins, cyclodextrin derivatives, and cyclodextrin particle sizes useful in the present invention, and their use in body powders is described in U.S. Patent 5,780,020 Peterson et al., issued July 14, 1998; and in U.S. Patent No. 5,429,628, Trinh et al., issued July 4, 1995, which are both incorporated herein in their entirety by reference.

The term "zeolite", as used herein, refers to non-fibrous zeolites. When included in the present invention, zeolites may be present from about 0.1% to about 25%, preferably from about 1% to about 15%, by weight of the body powder composition. A detailed description of zeolites useful in the present invention is found in U.S. Patent No. 5,429,628, Trinh et al., issued July 4, 1995, incorporated herein in its entirety by reference.

Carbon odor-controlling agents described in U.S. Patent No. 5,429,628 may be used in the present invention at a level of from about 0.1% to about 25%, by weight of the body powder composition.

Sodium bicarbonate is known in the art for its use as an odor absorber. An example of sodium bicarbonate and its use as an underarm deodorant is found in U.S. Patent No. 4,382,079, to Marschner, issued May 3, 1983, which is incorporated herein in its entirety by reference. When included in the present invention, sodium bicarbonate may be present from about 0.1% to about 50%, by weight of the body powder composition.

The antimicrobial agents of the present invention are selected from a group consisting of antibacterial agents, antifungal agents, and mixtures thereof. Antimicrobial agents help destroy and/or control the amount of bacteria and/or fungi present on the skin. Preferred antimicrobial agents are zinc phenolsulfonate, zinc oxide, triclosan, Zelec® AM by DuPont, zinc ricinoleate, zinc undecylenate, and mixtures thereof. More preferred are zinc phenolsulfonate, zinc oxide, and triclosan. Triclosan is available from Ciba-Geigy as Irgasan DP-300. Examples of antimicrobial/antibacterial agents useful in the present invention are found in the Cosmetic Bench Reference, 1994 Edition, page 10, which is incorporated herein by reference. Examples of antifungal agents are found in the Cosmetic Bench Reference, 1994 Edition, page 42, which is incorporated herein by reference. When included in the present invention, these agents are at a level of from about 0.01% to about 25%. Preferably from about 0.1% to about 10%, by weight of the body powder composition.

When used on the underarms or on feet, antiperspirant ingredients may be included in the present invention. Examples of antiperspirants known in the art are found in the Cosmetic Bench Reference, 1994 Edition, page 13, which is incorporated herein by reference. When included in the present invention, antiperspirants may be present from about 0.1% to about 25%, by weight

of the body powder composition. Preferably, however, the present powders are essentially free of anti-perspirants.

Skin Aids: The compositions used in the methods of the present invention may also optionally include skin aids. The term "skin aids", as used herein, refers to skin protectants, emollients, moisturizers, and antioxidants. Skin protectants useful in the present invention are found in the Cosmetic Bench Reference, 1994 Edition, page 53; and the Monograph on Skin Protectant Drug Products for Over-the-Counter Human Use, 21 CFR 347. Preferred skin protectants are corn starch, kaolin, mineral oil, sodium bicarbonate, dimethicone, zinc oxide, colloidal oatmeal, and mixtures thereof. When present, the skin protectants comprise from about 0.1% to about 80%, preferably from about 0.1% to about 30%, most preferably from about 0.1% to about 10%, by weight of the body powder composition.

Emollients and moisturizers useful in the present invention can be found in the Cosmetic Bench Reference, 1994 Edition, pages 27-32 and 46-48, incorporated herein by reference. Preferred emollients and moisturizers are tocopherol, tocopheryl acetate, aloe, vegetable oils, mineral oil, petrolatum, jojoba oil, and mixtures thereof. More preferred are encapsulated or spray/freeze dried emollients. The use of spray/freeze dried or encapsulated emollients keeps the emollients protected in the powder carrier until they are released through shearing (such as rubbing against undergarments or clothes) or through contact with skin moisture. Examples of preferred commercial spray/freeze dried aloe useful in the present invention are Terra-Dry™ Freeze Dried Aloe, Terra-Pure™ Freeze or Spray Dried Aloe, and Terra-Spray ™ Spray Dried Aloe, all from Terry Laboratories. Examples of preferred commercial encapsulated tocopheryl acetate are 3M Brand Microcapsules of Vitamin E Acetate in sunflower/mineral oil, available from 3M Encapsulated Products. When present, the emollients/moisturizers comprise from about 0.1% to about 50%, preferably from about 0.1% to about 25%, most preferably from about 0.1% to about 10%, by weight of the body powder composition.

Antioxidants useful in the present invention are found in the Cosmetic Bench Reference, 1994 Edition, pp. 11, 13, incorporated herein by reference. Preferred are retinol, retinyl acetate, and retinyl palmitate, and more preferred, encapsulated antioxidants. When present, the antioxidants comprise from about 0.1% to about 25%, preferably from about 0.1% to about 10%, by weight of the body powder composition.

Binders: The compositions used in the present invention may optionally also include dry or wet binders to help promote adhesion of the powder to the skin. Binders useful in the present invention are found in the Cosmetic Bench Reference, 1994 Edition, pp. 13-14, incorporated herein by reference. Preferred binders are calcium stearate, zinc stearate, magnesium stearate, isopropyl myristate, magnesium myristate, silicone, and mixtures thereof. More preferred are zinc stearate, magnesium stearate, dimethicone, and mixtures thereof. When included in the

composition, the binders are at a level of from about 0.1% to about 25%, preferably from about 1% to about 15%, by weight of the body powder composition.

Flow Aids: Flow aids such as those known in the art may be included in the compositions used in the present invention where increased flowability (and/or anti-caking) of the powder is desired. Examples of flow agents known in the art include tricalcium phosphate. Other flow agents are found in McCutcheon's Functional Materials, 1992 Edition, Vol. 2, pp. 11-12, incorporated herein by reference.

Anti-pruritics: Anti-pruritic agents such as those known in the art may be included in the compositions used in the present invention. Examples of anti-pruritic agents useful in the present invention are Magnesium-L-Lactate, hydrocortisone, hydrocortisone acetate, and colloidal oatmeal. A description of anti-pruritic agents are found in the Handbook of Non Prescription Drugs, 10th Edition, p. 529, 1993, incorporated herein by reference. When included in the composition, anti-pruritic agents may be present from about 0.1% to about 40%, by weight of the body powder composition.

Colorants, Fragrances, and Preservatives: Colorants, dyes, fragrances, and/or preservatives can be optionally added to the compositions for visual appeal and performance impression. Colorants and preservatives suitable for use in the present invention are found in the Cosmetic Bench Reference, 1994 Edition, pp. 21-22; pp. 50-52, incorporated herein by reference. Fragrances known in the art may also be added to the powders herein.

PROCESS OF MAKING COMPOSITIONS

The compositions of the present invention are prepared by the following steps: creating a mixture by mixing odor absorbers and optional ingredients in a powder carrier via a commercially available mixer such as a vee-blender, double cone blender, or ribbon blender until the mixture is uniform and creating a reduced size mixture using a commercially available size reduction technique such as hammer milling, impact milling, ball milling, or fluid energy milling until the desired particle size distribution is achieved (which may require repeating milling steps). A variety of screens may be used in the milling steps, such as those with herringbone-type perforations or round hole perforations. To achieve better homogeneity of the total mixture while blending and to minimize the creation of "fines" (undesirable, dust-like powder particles) when repeated milling steps are necessary, it is recommended that the "starting" particle size range of the ingredients in the total mixture prior to blending/milling be similar. For example, if there are present in the composition crystalline or granular materials (i.e. triclosan, cyclodextrin, or zinc phenolsulfonate) with starting particles of size greater than 100 microns while the remaining ingredients in the powder composition have starting particle sizes below 50 microns, it is suggested that the crystalline/granular materials undergo an initial milling step separate from

the remaining ingredients so they can attain a size below 50 microns similar to the other ingredients' particle sizes. Thereafter, the crystalline materials of reduced size can be added to the other components of similar size and any mixing/milling steps carried out with the total mixture.

Liquid components, where included in the formula (e.g. wet binders, skin aids/protectants, or fragrances), may be incorporated into the powder by mixing them with the powder carrier, any of the powder ingredients, or the total mixture. For even dispersion of the liquid(s) onto the designated powder component(s), it is recommended that the liquid(s) be sprayed onto the powder while mixing. Further, a micronized spray will help facilitate achieving a more uniform dispersion.

METHODS OF USE

The methods of controlling body odor comprise topically applying to human skin and/or hair the powders described herein. Preferably, the powders described herein are applied to occluded skin. The present invention also encompasses a method of reducing vaginal odor on a human comprising applying the compositions described herein onto a pelvic region, external vagina, and/or panty-area. However, the compositions of the present invention should not be inserted into the vagina, nor applied onto the vulva. Additionally, the powders used in controlling body odor are also useful in reducing excess moisture on skin.

An "effective amount" of the compositions of the present invention, as used herein, means an amount sufficient to absorb body odor to the point that body odor is not discernible by the human sense of smell. Where the method of use is aimed at reducing excess moisture, an "effective amount" of the compositions of the present invention, as used herein, means an amount sufficient to absorb excess moisture to the point where excess moisture is no longer present.

The compositions of the present invention are topically applied directly to the skin or hair. The compositions can be delivered by placing the composition into a dispensing means and applying an effective amount via spraying, sprinkling, shaking, or rubbing the composition onto the desired skin surface. Preferably the dispensing means is a canister, a spray bottle, or a pre-formed wipe which comprises a flexible dispensing means.

Alternatively, the user may deposit the composition of the present invention onto a wipe comprising a flexible dispensing means of his or her own choosing. To do this, the user simply chooses a flexible dispensing means such as a washcloth or puff; transfers the composition of the present invention from a bottle or other suitable container over the chosen flexible dispensing means, and applies the composition to the desired area of the body. The user may also use his/her hand to apply the compositions of the present invention. The user may use as much or as little of the composition of the present invention as he/she desires, depending upon their intended

use and degree of odor and moisture control necessary. Typically, the user uses 0.7g to 1g of powder per application, typically from about one to about five times per day.

The following non-limiting examples illustrate the formulations for use in the methods of the present invention.

Ingredient	Example IA % W/W	Example IIA % W/W	Example IIIA % W/W	Example IVA % W/W	Example VA % W/W	Example VIA %W/W
Silica (Microspheres)	-	-	-	15		
Silica Shells, Amorphous (Ellipsoids)	5	-	15	20	5	17
Fumed Silica	-	1	2	-		
Magnesium Carbonate	-	3	-	-		
Calcium Silicate		15	-	-		
Cornstarch	-	37.7	42.5	47.7	53.7	41.7
Rice Starch	55.2	-	-	-		
Zinc Stearate	-	3	-	10		
Magnesium Stearate	15	-	3			
Nylon	-	5	10	-		10
Polyethylene	10	-	-	-	10	
Mica	10	5	-	-		
Lauroyl Lysine	-	7	20	1	20	
Lauroyl-Lysine treated Cornstarch						20
Silicon Dioxide, Colloidal					3	3
Optional Ingredients*	4.8	13.3	7.5	6.3	8.3	8.3
TOTAL	100	100	100	100	100	100

*The Optional Ingredients above could comprise ingredients such as additional odor control agents, skin aids, antimicrobials, antipruritics, perfumes, colorants, or preservatives. Additionally, other simple examples might include the odor absorbers in the amounts given above, and a starch as the powder carrier (e.g. Example IA could comprise 5% Silica ellipsoids and 95% rice starch).

Examples IB-VIB comprise the Examples IA-VIB, respectively, wherein the Optional Ingredients are as follows (by weight of the total body powder).

Ingredient	Example IB % W/W	Example IIB % W/W	Example IIIB % W/W	Example IVB % W/W	Example VB % W/W	Example VIB %W/W
Cyclodextrin	-	3	2.9	-		
Sodium Bicarbonate	2	-	-	-		
Triclosan	-	0.2	0.1	-	0.1	0.1
Zinc Phenolsulfonate	-	3	2	-	2	2
Dimethicone	2.5	5	2.5	-	2.5	2.5
Aloe Vera	-	0.1	-	-		
Vitamin E		2	-	4		
Perfume	-	-	-	0.5	0.8	0.8

Methyl paraben	0.2	-	-	-		
Propyl paraben	0.1	-	-	-		
Colloidal oatmeal	-	-	-	1.8		
Beta Cyclodextrin					2.9	2.9
TOTAL OPTIONAL	4.8	13.3	7.5	6.3	8.3	8.3

Prepare Examples IA-VIA and IB-VIB as follows: create a mixture by mixing all dry ingredients in a commercially available mixer such as a vee-blender, double cone blender, or ribbon blender until the mixture is uniform; reduce the particle size of the mixture using a grinding/pulverizing technique such as hammer milling, impact milling, ball milling, or fluid energy milling; and create a second mixture by adding any liquid phase skin aids and/or perfumes to the mixture, preferably using spray atomization while mixing for a more even dispersion. The second mixture can then undergo a second pulverizing/grinding step, and if desired, an air classifying operation.

Example VII: A large woman wishes to reduce her body odor. The woman applies the powder of Example V by sprinkling the composition from a bottle into the palm of her hand and rubbing the composition into the intertriginous regions between her skin folds as well as other occluded skin sites. The woman notices less odor. (Alternatively, the woman applies the powder of one of the other above examples and notices similar results).

WHAT IS CLAIMED IS:

1. A method of controlling body odor comprising the application, to skin, of a body powder composition which comprises:

   a. from about 2% to about 60%, by weight of the body powder, of an odor absorber selected from the group consisting of silicas, silicates, carbonates, and mixtures thereof; and

   b. a powder carrier.

2. A method of controlling vaginal odor comprising the application, to the pelvic region, of a body powder composition which comprises:

   a. from about 2% to about 60%, by weight of the body powder, of an odor absorber selected from the group consisting of silicas, silicates, carbonates, and mixtures thereof; and

   b. a powder carrier.

3. The method according to Claim 1 or 2 wherein the powder carrier comprises:

   a. from about 0% to about 40%, by weight of the body powder, of a first component selected from the group consisting of zinc stearate, magnesium stearate, fatty acid derivatives, and mixtures thereof;

   b. from about 0% to about 40%, by weight of the body powder, of spherical particles which are selected from the group consisting of nylon, polyethylene, polytetrafluoroethylene, and mixtures thereof;

   c. from about 0% to about 50%, by weight of the body powder, of one or more platelet-shaped powders; and

   d. from about 25% to about 90%, by weight of the body powder, of one or more starches.

4. The method according to Claim 1 or 2 wherein the powder carrier comprises carrier ingredients selected from the group consisting of: from about 3% to about 25% , by weight of the body powder, of the first component; from about 1% to about 30%, by weight of the body powder, of spherical particles; from about 5% to about 45%, by

weight of the body powder, the platelet shaped powders; and from about 25% to about 75%, by weight of the body powder, of the starches.

5. The method according to any of the preceding claims wherein the body powder comprises from about 4% to about 40%, by weight of the body powder of the odor absorbers.

6. The method according to any of the preceding claims wherein the odor absorber is selected from the group consisting of silica ellipsoids, silica microspheres, and mixtures thereof.

7. The method according to any of the preceding claims wherein the odor absorber is selected from the group consisting of calcium carbonate, magnesium carbonate, zinc carbonate, and mixtures thereof.

8. The method according to any of the preceding claims wherein the odor absorber is calcium silicate.

9. A method of controlling body odor comprising the application, to skin, of a body powder composition which comprises:

a. from about 1% to about 20%, by weight of the body powder, of odor absorbers selected from the group consisting of silica ellipsoids, silica microspheres, and mixtures thereof; and
b. a powder carrier.

10. The method according to Claim 9 wherein the body powder carrier comprises: from about 0% to about 40%, by weight of the body powder, of a first component selected from the group consisting of zinc stearate, magnesium stearate, fatty acid derivatives, and mixtures thereof; from about 0% to about 40%, by weight of the body powder, of spherical particles which are selected from the group consisting of nylon, polyethylene, polytetrafluoroethylene, and mixtures thereof; from about 0% to about 50%, by weight of

the body powder, of one or more platelet-shaped powders; and from about 25% to about 90%, by weight of the body powder, of one or more starches.

INTERNATIONAL SEARCH REPORT

Inter nal Application No
PCT/US 99/29170

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61K7/32 A61K7/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 18439 A (PROCTER & GAMBLE) 7 May 1998 (1998-05-07) page 1, paragraphs 2,4 page 2, paragraphs 2,3,6,8 page 4, paragraphs 5,6 page 5, paragraphs 1-4 page 9, paragraph 3 examples 1-14 claims 1-14 — -/—	1-10

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
4 April 2000	10/04/2000

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INTERNATIONAL SEARCH REPORT

Inter nal Application No
PCT/US 99/29170

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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P,X	WO 98 56340 A (PROCTER & GAMBLE) 17 December 1998 (1998-12-17) page 1, paragraphs 1,2 page 2, paragraphs 3,4,6 page 3, paragraph 2 page 4, paragraph 6 -page 5, paragraph 3 page 15, paragraph 3 examples 1-16 claims 1-3,10,11	1-10
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X	US 5 626 852 A (SUFFIS ROBERT ET AL) 6 May 1997 (1997-05-06) column 1, line 27-32 column 3, line 23-35 example E claims 1,12,18	1,3,5,8

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