

POLYESTER-PACKED HINOKITIOL-CONTAINING COMPOSITION

FIELD OF THE INVENTION

The present invention relates to compositions containing hinokitiol or a salt thereof as packed in
5 light-opaque polyester containers.

PRIOR TECHNOLOGY

These days preservatives are generally incorporated in pharmaceutical preparations, cosmetic preparations, agrochemical preparations, and alimentary
10 preparations. While hinokitiol, inclusive of its salts, is known among such preservatives, development of a preservative agent that will be more potent, safe and stable has been awaited in these fields.

Meanwhile, as containers for pharmaceutical or
15 quasi-pharmaceutical solutions, such as oils, lotions, liniments, ointments, etc. or cosmetic compositions such as cleansers, creams, lotions, oils, milk lotions, packs, etc., it is common practice to employ polyethylene containers which are very satisfactory in gas-barrier
20 properties, moldability and economics.

However, the present inventors' investigation revealed that when such compositions containing hinokitiol or a salt thereof as the preservative are filled in such containers, this preservative permeates through the
25 polyethylene container wall gradually with the passage of

time. Moreover, this preservative is known to be susceptible to light. However, if a light-barrier agent is added to a polyethylene container to overcome the above disadvantage, the preservative tends to become
5 decomposed or adsorbed and stuck to the container to cause discoloration.

SUMMARY OF THE INVENTION

After a great deal of research, the inventors of the present invention discovered that when hinokitiol
10 or a salt thereof is used as said preservative and a composition containing this particular preservative is accommodated in a light-opaque polyester container, the preservative does not leak through the container wall and even when a polyester supplemented with a light-barrier
15 agent is used as the container material, the preservative is not decomposed by the light-barrier agent contained nor is it adsorbed or stuck to the container wall but its inherent antiseptic potential is fully exploited so that a very desirable composition stable for a long time and
20 safe can be provided. The inventors have ultimately developed the present invention.

The present invention, therefore, is directed to:

a polyester-packed hinokitiol-containing
25 composition comprising a composition containing hino-

kitiol or a salt thereof as filled in a light-opaque polyester container;

a polyester-packed hinokitiol-containing composition as mentioned above which is a solution, gel, ointment, cream or oil containing hinokitiol or a salt thereof as filled in a light-opaque polyester container;

a polyester-packed hinokitiol-containing composition as mentioned above which is a cosmetic preparation containing hinokitiol or a salt thereof as filled in a light-opaque polyester container;

a polyester-packed hinokitiol-containing composition which is an external or topical preparation containing hinokitiol or a salt thereof as filled in a light-opaque polyester container;

a polyester-packed hinokitiol-containing composition which is a liquid composition containing hinokitiol or a salt thereof as filled in a light-opaque polyester container;

a polyester-packed hinokitiol-containing composition as mentioned just above which contains 0-10 w/w % of a lower alcohol together with hinokitiol or a salt thereof.

a polyester-packed hinokitiol-containing composition which is an ointment, gel, cream or oil containing hinokitiol or a salt thereof as filled in a

light- opaque polyester container;

a polyester-packed hinokitiol-containing
detergent composition containing hinokitiol or a salt
thereof as filled in a light-opaque polyester container;

5 a polyester packed hinokitiol-containing
composition which is a solution, gel, ointment, cream or
oil containing a hydrocarbon and a fatty acid ester to-
gether with hinokitiol or a salt thereof as filled in a
light-opaque polyester container;

10 a polyester-packed hinokitiol-containing composition
which is a solution, gel, ointment, cream or oil
containing one or more species of polyhydric alcohol,
sugar, sugar alcohol and polyhydric alcohol alkyl ether,
ethanol and pantothenyl alcohol together with hinokitiol
15 or a salt thereof as filled in a light-opaque polyester
container; and

a polyester-packed hinokitiol-containing composition
which is a detergent composition containing maltitol and
a polyethylene glycol having an average molecular weight
20 of 4000-15000 together with hinokitiol or a salt thereof
as filled in a light-opaque polyethylene container.

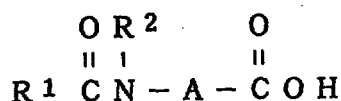
Also, the present invention is directed to:

a hinokitiol-containing composition which is a oil
containing a hydrocarbon and a fatty acid ester together
25 with hinokitiol or a salt thereof;

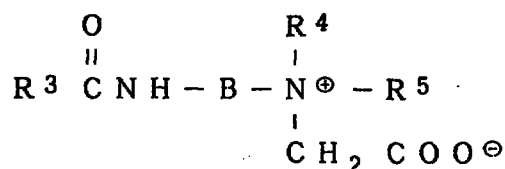
a hinokitiol-containing composition which is a lotion containing one or more species of polyhydric alcohol, sugar, sugar alcohol and polyhydric alcohol alkyl ether, ethanol and pantothenyl alcohol together
 5 with hinokitiol or a salt thereof; and

a hinokitiol-containing composition which is a detergent composition containing maltitol and a polyethylene glycol having an average molecular weight of 4000-15000 together with hinokitiol or a salt thereof.
 10 Particularly, the following polyester-packed hinokitiol-containing compositions are provided in accordance with the present invention.

(A) A polyester-packed hinokitiol-containing composition which is a detergent composition containing
 15 an anionic surfactant of general formula (1)

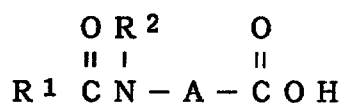


[wherein R¹ represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R² represents a lower alkyl radical; A represents a lower alkylene radical] or a salt thereof and an amphoteric
 20 surfactant of general formula (2)

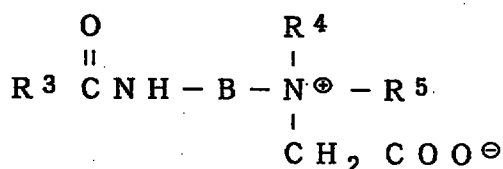


[wherein R^3 represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R^4 and R^5 each represents a lower alkyl radical; B represents a lower alkylene radical] together with hinokitiol or a salt thereof as filled in a light-opaque polyester container.

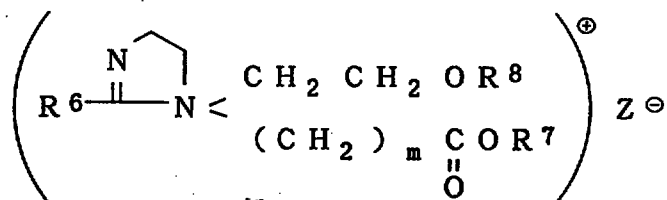
(B) A polyester-packed hinokitiol-containing composition which is a detergent composition containing an anionic surfactant of general formula (1)



[wherein R^1 represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R^2 represents a lower alkyl radical; A represents a lower alkylene radical] or a salt thereof, an amphoteric surfactant of general formula (2)

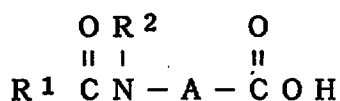


[wherein R^3 represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R^4 and R^5 each represents a lower alkyl radical; B represents a lower alkylene radical], and an amphoteric surfactant of general formula (3)

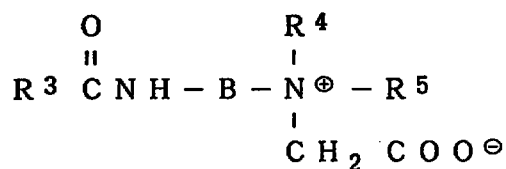


[wherein R^6 represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R^8 represents a hydrogen atom or CH_2COOR^9 ; R^7 and R^9 each represents an alkali metal, an alkaline earth metal, copper or zinc; m is equal to 1 or 2; Z represents OH , $\text{C}_{12}\text{H}_{25}\text{OSO}_3$, or $\text{C}_{11}\text{H}_{23}\text{CON}(\text{CH}_3)\text{CH}_2\text{COO}$] together with hinokitiol or a salt thereof as filled in a light-opaque polyester container.

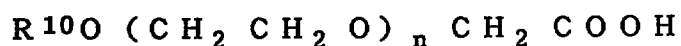
(C) A polyester-packed hinokitiol-containing composition which is a detergent composition containing an anionic surfactant of general formula (1)



[wherein R^1 represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R^2 represents a lower alkyl radical; A represents a lower alkylene radical] or a salt thereof, an amphoteric surfactant of general formula (2)



[wherein R^3 represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R^4 and R^5 each represents a lower alkyl radical; B represents a lower alkylene radical], and an anionic surfactant of
5 general formula (4)



[wherein R^{10} represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; n represents a whole number satisfying the relation $1 \leq n \leq 10$] or a salt
10 thereof together with hinokitiol or a salt thereof as filled in a light-opaque polyester container.

(D) A polyester-packed hinokitiol-containing composition which is a solution, gel, ointment, cream or oil containing at least one species of zinc compound
15 together with hinokitiol or a salt thereof as filled in a light-opaque polyester container.

(E) A polyester-packed hinokitiol-containing composition which is a solution, gel, ointment, cream or oil containing at least one copper compound together with
20 hinokitiol or a salt thereof as filled in light-opaque polyester container.

Examples of the salt of hinokitiol which can be used in the practice of the invention are inorganic salts including alkali metal salts such as the sodium salt and
25 potassium salt, alkaline earth metal salts such as the

magnesium salt, and salts with other metals such as the copper salt and zinc salt; organic salts including alkanolamine salts such as the diethanolamine salt, 2-amino-2-ethyl-1,3-propanediol salt and tri ethanolamine salt, heterocyclic amine salts such as the morpholine salt, piperazine salt and piperidine salt, the ammonium salt, and basic amino acid salts such as the arginine salt, lysine salt and histidine salt. Each of the basic amino acids mentioned above may be the D form or the L form or a mixture of these. In the practice of the present invention, hinokitiol and its salt may be used either singly or in combination.

The above-mentioned hinokitiol and salt thereof for use in the various compositions of the present invention have high antimicrobial activity encompassing a broad spectrum of microorganisms with a characteristically low microbial selectivity. In regard of their safety, these compounds are not only hypoirritant to the skin as demonstrable by a dermal irritation test but also least irritant to the eye, thus producing excellent responses in the treatment of conjunctivitis, brepharitis and other diseases of the eye.

The material of the light-opaque polyester container for the composition of the present invention is not critical only if it is a polyester material having

light-barrier properties. The polyester mentioned above is not particularly restricted, although it is preferably a polyethylene terephthalate resin available upon condensation reaction of dimethyl terephthalate or
5 terephthalic acid with ethylene glycol. The resin obtainable by replacing the above-mentioned glycol component in part with 1,4-cyclohexanedimethanol can likewise be employed.

The desired light-opaque polyester can be
10 obtained by adding any of those light-barrier or screening agents which are generally used for protection against light. Among the light-barrier agents that can be used are a variety of pigments such as titanium dioxide, iron dioxide, carbon black, etc., dyes such as
15 anthraquinone yellow, phthalocyanine blue, etc., and ultraviolet absorbers such as 2-(2'-hydroxy-5'-methyl-phenyl)benzotriazole and so on. The amount of said light-barrier agent to be incorporated is not particularly restricted but may be the usual amount.

20 The light-opaque polyester container for use in accordance with the present invention may also be a laminate container fabricated by laminating a light-opaque material, such as metal foil, e. g. aluminum foil, or paper, on one side (the side not to contact the
25 contents) of a film or sheet of polyester resin such as

mentioned above.

The shape of the light-opaque polyester container mentioned above may be that of a bottle, jar, pouch, bag, tube, pillow case or the like. Particularly
5 when said tubular or pillow case form is used for the container, the container material may be shaped into such a tubular or pillow case form with an adhesive. Sometimes a polyethylene film, in lieu of the adhesive, is laminated on one side (the side to contact the
10 contents, viz. inner side) of a light-opaque polyester film or sheet. Even where the present invention is carried into practice using a container having such an polyethylene lining, the preservative component of the composition packed in the container may permeate through
15 the polyethylene film but is prevented from diffusing through the container by the externally disposed polyester film. However, said polyethylene film should not contain a light-barrier agent that might react with the preservative.

20 The size and wall thickness of the polyester container for use in the present invention are virtually not restricted.

The composition containing hinokitiol or a salt thereof which is to be packed in the above container is
25 not particularly restricted in the formulation or in the

end use. Thus, it may be any of the various compositions which are conventionally used in the fields of drugs, quasi-drugs, cosmetics, household supplies, foodstuffs, and farm chemicals.

5 Such compositions are generally prepared using the conventional filler, diluent, binder, humectant, disintegrator, surfactant, lubricant and/or other additives.

 Such compositions can be selectively provided
10 in various dosage or application forms, typically tablets, pills, powders, solutions, oils, suspensions, emulsions, granules, capsules, suppositories, injections (solution, suspension, etc.), sprayable preparations such as inhalants, liquid coatings, topical aerosols, etc.,
15 lotions, gels, oleageous ointments, emulsion ointments such as O/W hydrophilic ointments and W/O hydrophilic ointments, water-soluble ointments, douches, creams, liniments, paps, etc., sheet-form preparations, and so on. Among the above-mentioned dosage forms, the
20 hinokitiol-containing composition of the present invention produces particularly desirable responses when provided in the solution, gel, ointment, cream, oil and other forms which provide for better contact with the container.

25 These dosage forms can be manufactured by the

conventional procedures.

In shaping the composition into the form of tablets, a variety of materials so far well known as carriers or vehicles in this field of art can be used.

5 Thus, for example, use may be made of excipients such as lactose, sucrose, sodium chloride, glucose, urea, starch, calcium carbonate, kaolin, crystalline cellulose, silicic acid, etc., binders such as water, ethanol, propanol, simple syrup, glucose solution, starch solution, gelatin
10 solution, carboxymethylcellulose, shellac, methyl-cellulose, potassium phosphate, polyvinylpyrrolidone, etc., disintegrating agents such as dried starch, sodium alginate, agar powder, laminaran powder, sodium hydrogen carbonate, calcium carbonate, polyoxyethylene sorbitan
15 fatty acid esters, sodium lauryl sulfate, glyceryl monostearate, starch, glucose, etc., disintegration preventing agents such as sucrose, stearin, cacao butter, hydrogenated oils, etc., absorption promoting agents such as quaternary ammonium bases, sodium lauryl sulfate,
20 etc., humectants such as glycerin, starch, etc., adsorbents such as starch, lactose, kaolin, bentonite, colloidal silicic acid, etc., lubricants such as purified talc, stearic acid salts, borax, polyethylene glycol, etc., and so forth. The tablets may be further processed
25 into coated tablets using an ordinary coating film, for

example sugar coated tablets, gelatin coated tablets, enteric-film coated tablets, film coated tablets, or double-layered tablets or multilayered tablets.

In shaping the composition into the form of pills, a wide variety of materials so far known as carriers or vehicles in this field of art can be used. Thus, for example, use may be made of excipients such as glucose, lactose, starch, cacao butter, hardened vegetable oils, kaolin, talc, etc., binders such as gum arabic powder, tragacanth powder, gelatin, ethanol, etc., disintegrating agents such as laminaran, agar, etc., and so forth.

In shaping the composition into the form of suppositories, a wide variety of materials so far known as carriers or vehicles in the art can be used. Thus, for example, there may be mentioned polyethylene glycol, cacao butter, higher alcohols, higher alcohol esters, gelatin, semisynthetic glycerides, and so on.

In the manufacture of aerosols, the dispersants and propellants known in the art can be liberally used. Thus, the dispersant that can be used includes lecithins such as soybean lecithin, egg yolk lecithin, etc., fatty acids such as oleic acid, linolic acid, linoleic acid, etc., and sorbitan fatty acid esters such as sorbitan trioleate, sorbitan monooleate, etc., among other

dispersants. The propellant includes the conventional liquefied gases such as liquefied petroleum gas, dimethyl ether, CFC 22, CFC 123, CFC 11, CFC 12, CFC 114, and compressed nitrogen, carbon dioxide and other gases.

5 For injections, the solutions, emulsions and suspensions are sterilized and are preferably isotonized to blood. For producing these forms, any of the diluents conventionally used in this field can be employed. Thus, for example, water, ethyl alcohol, propylene glycol,
10 ethoxylated isostearyl alcohol, polyoxylated isostearyl alcohol, polyoxyethylene sorbitan fatty acid esters, etc. can be used. In this procedure, sodium chloride, glucose or glycerin may be incorporated into the pharmaceutical preparation in an amount sufficient to provide isotonic
15 solutions. Conventional solubilizing agents, buffers, soothing agents and/or the like may also be added.

 In the manufacture of a lotion, liniment, oleagenous ointment, an emulsion ointment such as O/W hydrophilic ointment or W/O absorption ointment, or a
20 water-soluble ointment, the various bases known in the art can be liberally selected and used.

 As to the base, oleagenous bases or water-soluble bases, for instance, can be used independently or in combination.

25 As specific examples, there may be mentioned

fats and oils such as peanut oil, sesame oil, soybean oil, safflower oil, avocado oil, sunflower oil, corn oil, rapeseed oil, cottonseed oil, castor oil, camellia oil, coconut oil, olive oil, poppy seed oil, cacao oil, beef
5 tallow, lard, wool oil, etc., the corresponding oils and fats chemically modified by hydrogenation or other treatment, mineral oils such as vaseline, paraffin, silicone oil, squalane, etc., higher fatty acid esters, higher aliphatic alcohols and waxes such as isopropyl
10 myristate, n-butyl myristate, isopropyl linoleate, propyl ricinoleate, isopropyl ricinoleate, isobutyl ricinoleate, heptyl ricinoleate, diethyl sebacate, diisopropyl adipate, cetyl alcohol, stearyl alcohol, bleached beeswax, spermaceti, wood wax, lanolin, carnauba wax,
15 shellac wax, etc., higher fatty acids such as stearic acid, oleic acid, palmitic acid, etc., mono-, di- and triglyceride mixture derived from saturated or unsaturated fatty acids containing 12 to 18 carbon atoms, polyhydric alcohols such as ethylene glycol, polyethylene
20 glycol, propylene glycol, glycerol, batyl alcohol, pentaerythritol, sorbitol, mannitol, etc.; gums such as gum arabic, benzoin gum, gum guaiac, gum tragacanth, etc.; natural water-soluble polymers such as gelatin, starch, casein, dextrin, pectin, pectin sodium, sodium
25 alginate, methylcellulose, ethylcellulose, carboxymethyl-

cellulose, hydroxyethylcellulose, hydroxypropylcellulose, nitrocellulose, crystalline cellulose, etc.; synthetic water-soluble polymers such as polyvinyl alcohol, poly(vinyl methyl ether), polyvinylpyrrolidone, sodium
5 polyacrylate, carboxyvinyl polymer, polyethyleneimine, etc.; nonionic, anionic, amphoteric and cationic surfactants; ethanol, isopropyl alcohol, and water, among others. The conventional additives such as a gelling agent, preservative, solubilizer, antioxidant, buffer, pH
10 control agent, wetting agent, antiseptic, colorant, scent, pigment, perfume, thickener, sequestering agent, ultraviolet absorber, and/or various surfactants can be added in suitable amounts.

Furthermore, vitamins and vitamin-like
15 substances as well as pharmacologically active ingredients such as hormones, antiinflammatory agents, antibacterial agents can also be added in suitable amounts.

The cosmetic product includes solution, solid
20 foam, paste, gels, creams, lotions (include multilayer lotion), oils, milk lotions, packs, preparations to be prepared before use and so on. These preparations can be manufactured by the conventional procedures.

The kinds of cosmetic products that can be
25 provided are soaps, shampoos, body shampoos, perfumes,

colognes, nail enamels, nail enamel removers,
dentifrices, rinses, makeup powders, dusting powders, eye
liners, mascaras, eyebrow pencils, hair preparations
(hair grooms, hair tonics), general-purpose creams and
5 milk lotions (for protecting, cleansing and conditioning
the skin), suntan or sunscreen creams, lotions and oils,
shaving creams and lotions, eye creams, general-purpose
lotions (for moisturizing, cleansing and conditioning the
skin), packs, facial wash preparations, cosmetic oils,
10 bath preparations, hair dyes, nail creams, mouthwashes,
whitening preparations, acne treatment preparations,
permanent wave preparations, and depilators, among
others.

In the manufacture of a detergent composition
15 in the form of a shampoo, body shampoo, or face wash
cream or gel, the conventional materials known in the art
can be liberally selected and used.

For example, the anionic surfactant that can be
used includes alkyl sulfates, polyoxyethylene alkyl ether
20 acetates, N-acylamino acid salts, N-acylmethyltaurine
salts, polyoxyethylene alkyl ether acetates,
alkylsuccinic acid salts, alkylsulfonic acid salts,
alkylphosphoric acid salts, polyoxyethylene alkyl ether
phosphate salts, monoglyceryl-sulfuric acid salts, soaps,
25 etherified carboxylic acid salts, α -olefinsulfonic acid

salts, alkanesulfonic acid salts, dialkylsulfosuccinic acid salts, alkylallylsulfonic acid salts and on on. These surfactants can be used independently or in combination.

5 The nonionic surfactant includes sorbitan fatty acid esters, glycerin fatty acid esters, polyglycerin fatty acid esters, propylene glycol fatty acid esters, polyoxyethylene-sorbitan fatty acid esters, polyoxyethylene-sorbit fatty acid esters, polyoxyethylene-glycerol fatty acid esters, polyoxyethylene glycol fatty acid esters, polyoxyethylene alkyl ethers, polyoxyethylene phytosterol, polyoxyethylene-polyoxypropylene alkyl ether, polyoxyethylene alkylphenyl ether, polyoxyethylene hydrogenated castor oil, polyoxyethylene
10 beeswax derivatives, polyoxyethylene lanolin derivatives, and so on. These surfactants can be used independently or in combination.

 The cationic surfactant includes amine salts, alkylamine salts, polyamine and alkanolamine fatty acid
20 derivatives, alkyl quaternary ammonium salts, alkyltrimethylammonium salts, dialkyldimethylammonium salts, alkyldimethylbenzylammonium salts, quaternary ammonium salts and so on. These surfactants can be used independently or in combination.

25 The amphoteric surfactant includes betaines,

imidazolines, and sulfate ester type surfactants and these surfactants can be used independently or in combination. The amount of the surfactant is not critical only if it is within the range where sufficient
5 detergent effects can be assured. Generally, the total amount of the surfactant or surfactants is preferably about 0.5-90 weight % and, for still better results, about 1-50 weight % based on the whole composition.

The other ingredients that can be incorporated
10 in appropriate amounts are pH control agents such as phosphoric acid, citric acid, hydrochloric acid, etc.; humectants such as propylene glycol, glycerol, sorbitol, maltitol, etc.; antiseptics or preservatives such as p-hydroxybenzoic esters; oils such as higher alcohols; hair
15 softeners such as cationized cellulose etc.; rheology or viscosity modifiers such as methylcellulose, hydroxymethylcellulose, carboxyvinyl polymer, polyvinyl alcohol, etc.; skin-forming agents such as hydrolyzed collagen etc.; solvents such as ethanol etc.; ultraviolet
20 absorbers; antioxidants such as tocopherol, sesamol, sesamolin, gossypol, phospholipids, nordihydroguaiaretic acid, butylhydroxyanisole, butylhydroxytoluene, propyl gallate, etc.; sequestering agents; inorganic salts; antidandruff agents; pharmacologically active substances
25 such as vitamins; antiperspiration agents,

antiinflammatory agents, etc.; animal or vegetable oil
extracts; deodorants; colors; perfumes; NMF (natural
moisturizing factor), amino acids, pyrrolidonecarboxylic
acid, salts of pyrrolidone carboxylic acid, salts of
5 lactic acid, and so forth.

Furthermore, incorporation of a zinc compound
such as zinc oxide, zinc chloride, etc. and/or a copper
compound such as copper oxide, copper chloride, etc.
results in potentiated antimicrobial efficacy and contri-
10 butes to the prevention of itching.

The detergent composition of the present
invention includes household detergent compositions such
as shampoos for pet animals, kitchen detergents, laundry
detergents and so on.

15 In the manufacture of cosmetic products such as
creams, lotions, oils, milk lotions, packs and toilet
water, the materials known in the art can be liberally
selected and used.

Taking the base or vehicle as an example,
20 oleagenous bases and water-soluble bases can be used in-
dependently or in combination.

As specific examples, there may be mentioned
fats and oils such as peanut oil, sesame oil, soybean
oil, safflower oil, avocado oil, sunflower oil, corn oil,
25 rapeseed oil, cottonseed oil, castor oil, camellia oil,

coconut oil, olive oil, poppy seed oil, cacao oil, beef tallow, lard, wool oil, etc., the corresponding oils and fats chemically modified by hydrogenation or other treatment, mineral oils such as vaseline, paraffin, silicone oil, squalane, etc., higher fatty acid esters, higher aliphatic alcohols and waxes such as isopropyl myristate, n-butyl myristate, isopropyl linoleate, propyl ricinoleate, isopropyl ricinoleate, isobutyl ricinoleate, heptyl ricinoleate, diethyl sebacate, diisopropyl adipate, cetyl alcohol, stearyl alcohol, bleached beeswax, spermaceti, wood wax, lanolin, carnauba wax, shellac wax, etc., higher fatty acids such as stearic acid, oleic acid, palmitic acid, etc., mono-, di- and triglyceride mixture derived from saturated or unsaturated fatty acids containing 12 to 18 carbon atoms, polyhydric alcohols such as ethylene glycol, polyethylene glycol, propylene glycol, glycerin, batyl alcohol, pentaerythritol, sorbitol, mannitol, etc.; gums such as gum arabic, benzoin gum, gum guaiac, gum tragacanth, etc.; natural water-soluble polymers such as gelatin, starch, casein, dextrin, pectin, pectin sodium, sodium alginate, methylcellulose, ethylcellulose, carboxymethylcellulose, hydroxyethylcellulose, hydroxypropylcellulose, nitrocellulose, crystalline cellulose, etc.; synthetic water-soluble polymers such as

polyvinyl alcohol, poly(vinyl methyl ether),
polyvinylpyrrolidone, sodium polyacrylate, carboxyvinyl
polymer, polyethyleneimine, etc.; nonionic, anionic,
amphoteric and cationic surfactants; ethanol, isopropyl
5 alcohol, and water, among others. Furthermore, the
conventional additives such as metal soaps, e.g. aluminum
stearate, magnesium stearate, calcium stearate, zinc
stearate, zinc palmitate, zinc myristate, magnesium
myristate, zinc laurate, zinc undecylate, etc.; vitamins
10 and vitamine-like substances, e.g. animal or plant
extracts, vitamin A1, A2, B1, B2, B6, B12, C, D, E, K,
and F, folic acid, nicotinic acid, pantothenic acid,
biotin, isositol, carnithine, ferulic acid, γ -oryzanol,
 α -lipoic acid, orotic acid, vitamin P, vitamin U, etc.;
15 hormones; amino acids; antiperspiration agents;
antiinflammatory agents; colors; ultraviolet absorbers;
ultraviolet screening agents, NMF (natural moisturizing
factor) such as pyrrolidonecarboxylic acid, salts of
pyrrolidonecarboxylic acid, salts of lactic acid, etc.;
20 humectants such as propylene glycol, glycerol, sorbitol,
maltitol, hyaluronic acid and salts thereof,
chondroitinsulfuric acid and salts thereof, ceramides,
etc.; deodorants; antiseptics such as p-hydroxybenzoic
acid esters; gelling agents; preservatives; antioxidants
25 such as tocopherol, sesamol, sesamolin, gossypol,

phospholipids, nordihydroguaiaretic acid,
butylhydroxyanisole, butylhydroxytoluene, propyl gallate,
etc.; buffers; pH control agents such as phosphoric acid,
citric acid, hydrochloric acid, etc.; wetting agents;
5 preservatives; colorants; scents; pigments; acne
treatment agents; deodorants; thickeners; and
sequestering agents, among others.

When the present invention is applied to a
lotion, the preferred is a lotion containing hinokitiol
10 or a salt thereof and 0-10 w/w % of a lower alcohol as
filled in said polyester container.

The cosmetic composition of the present
invention can be provided within the usual pH range for
cosmetic products, i.e. preferably about 3.0-11.0 and
15 most preferably about 5.0-8.0.

The food includes various beverages.

The farm chemical includes insecticides,
miticides and bactericides, among others.

The product for animal use includes shampoos
20 and rinses for pet animals, among other products.

In the practice of the present invention, the
amount of hinokitiol and/or a salt thereof is not
restricted only if it is an effective amount. Generally,
the preservatively effective amount is preferably not
25 less than 0.0001 weight % and, for still better results,

about 0.001-10.0 weight %.

For use as an antimicrobial agent, hinokitiol or a salt thereof is used in a concentration of generally not less than 0.0001 weight % and preferably about 0.001-
5 90 weight %.

When the present invention is applied to drug products, quasi-drug products or cosmetic products, the method of administration or use is not particularly restricted. Thus, the composition of the present
10 invention can be administered or applied according to the dosage form or formulation form used, the patient factors such as age and sex, the severity of disease or condition. For example, solutions, suspensions and emulsions are administered orally. Injections can be
15 administered intravenously either as they are alone or in admixture with ordinary glucose, amino acid or other infusions or, where necessary, intramuscularly, intradermally, subcutaneously or intraperitoneally. Products for topical use are coated or sprayed on the
20 affected site. The composition of the present invention may also be used as diluted.

For use of the composition of the present invention as a disinfectant or antiseptic, the composition can be applied by the conventional means.
25 Among such means are spraying, brush application, wiping

with a cloth, paper towel, steamed towel, wet tissue, etc., and aerosol spraying.

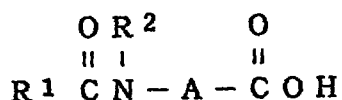
The composition of the present invention can be put to use by adding it to detergents, sizes, softeners, 5 bleaches for general and hospital supplies (for apparels, food, tableware, furniture, gauze, sheets, curtains, etc.). Moreover, the composition of the present invention can be applied to animals and animal goods or furnishings which must be disinfected.

10 As an example of the polyester-packed hinokitiol-containing composition of the present invention in the form of a detergent, there can be mentioned the following hypoirritant detergent composition as filled in a polyester container 15 (hereinafter referred to as composition A).

Thus, the detergent composition (for example, shampoo) heretofore in use is so highly irritant that it promotes the onset of itching or induces allergic reactions and cannot be applied to patients with skin 20 disease such as atopic dermatitis or contact dermatitis, particularly those patients who are highly susceptible to irritation. However, when hinokitiol or a salt thereof and at least one surfactant selected from an anionic surfactant of the following general formula (1) or a salt 25 thereof (inclusive of the salt, referred to briefly as a

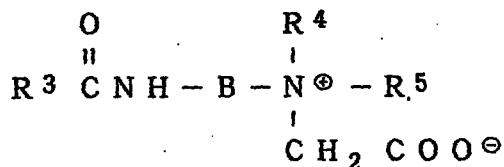
surfactant) and an amphoteric surfactant of the following general formula (2) are selected as the preservative component and the essential component, respectively, and these two components are filled in a polyester container, there is obtained a hypoirritant detergent composition suitable for patients with skin disease such as atopic dermatitis, particularly those patients susceptible to irritation, with said hinokitiol or salt thereof remaining stable for a long time.

10 An anionic surfactant of general formula (1):



[wherein R^1 represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R^2 represents a lower alkyl radical; A represents a lower alkylene radical] or a salt thereof.

15 An amphoteric surfactant of general formula (2):



[wherein R^3 represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R^4 and R^5 each represents a lower alkyl radical; B represents a lower alkylene radical].

20

In the above general formulas, the lower alkyl radical includes a straight-chain or branched-chain alkyl radical having 1 to 6 carbon atoms, such as methyl, ethyl, propyl, isopropyl, butyl, isobutyl, tert-butyl, 5 pentyl, hexyl, etc., with methyl being the most preferred radical.

The saturated or unsaturated hydrocarbon radical having 1 to 40 carbon atoms includes, inter alia, methyl, ethyl, propyl, isopropyl, butyl, tert-butyl, 10 pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl, 11-methyldodecyl, 10-methylundecyl, tridecyl, tetradecyl, pentadecyl, heptadecyl, octadecyl, nonadecyl, eicosyl, heneicosyl, docosyl, tetracosyl, triacontyl, pentatriacontyl, tetracontyl, vinyl, allyl, isopropenyl, 15 ethynyl, 2-pentynyl, 3-butenyl, 9-decenyl, cis-8-heptadecenyl, trans-8-heptadecenyl, 2-decynyl, 2-octynyl, cocoalkyl and so on. Among these radicals, saturated or unsaturated hydrocarbon radicals having 5 to 19 carbon atoms are preferable and those having 7 to 13 carbon 20 atoms are more preferable.

Especially, as the radical shown by R^1 in general formula (1), a C_{9-13} saturated hydrocarbon radical such as undecyl, tridecyl or the like is preferred and as the radical shown by R^3 in general 25 formula (2), cocoalkyl and a C_{9-13} saturated hydrocarbon

radical such as undecyl, tridecyl or the like is preferred.

The lower alkylene radical includes a straight-
or branched-chain alkylene radical having 1 to 6 carbon
5 atoms, such as methylene, ethylene, trimethylene, 2-
methyltrimethylene, 2,2-dimethyltrimethylene, 1-methyl-
trimethylene, methylmethylene, ethylmethylene, tetra-
methylene, pentamethylene, hexamethylene and so on.

As the radical represented by A in general
10 formula (1), methylene and ethylene are preferred, and
ethylene is more preferable. As the radical represented
by B in general formula (2), ethylene and trimethylene
are favorable and trimethylene is more preferable.

As the surfactants of general formula (1) and
15 general formula (2), not only a combination of surfact-
ants having the same substituents, but also a combination
of surfactants having different substituents can be
employed.

The salts of compounds of general formula (1)
20 include inorganic salts, e.g. salts with alkali metals
such as sodium, potassium, etc., salts with alkaline
earth metals such as magnesium etc., salts with other
metals such as Cu, Zn, etc., and organic salts, e.g.
salts with alkanolamines such as diethanolamine, 2-amino-
25 2-ethyl-1,3-propanediol, triethanolamine, etc., salts

with morpholine, piperazine, piperidine, etc., ammonium salts, and salts with basic amino acids such as arginine, lysine, histidine and so on. The basic amino acids may be D-compounds or L-compounds or mixtures thereof.

5 While the hinokitiol and salt thereof is described above, the preferred compound for said composition A includes hinokitiol and the salts of hinokitiol with Na, K, L-arginine, L-histidine, 1,3-propanediol, triethanolamine, Zn, and Cu. As to the
10 surfactant component of composition A, at least one of the anionic surfactant of general formula (1) and the amphoteric surfactant of general formula (2) can be used. These surfactants have excellent detergent activity and, yet, a very low irritation potential. For composition A,
15 it is particularly advisable to employ both of said anionic surfactant of general formula (1) and said amphoteric surfactant of general formula (2) and this combined use of the two types of surfactant results in improved detergent effect and hypoirritancy. The ratio
20 of the surfactant of general formula (1) to the surfactant of general formula (2) that can be used in such combination is 1:20-20:1, preferably 11:1-3:1, more preferably 4:1-1:3, and for still better results, 4:1-2:3.

25 The total amount of said anionic surfactant of

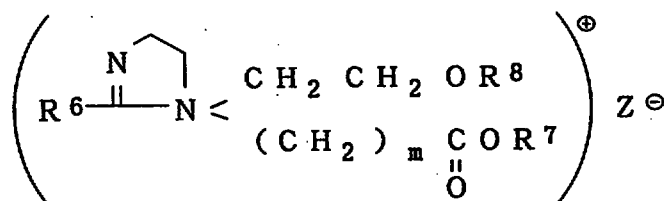
general formula (1) and said amphoteric surfactant of general formula (2) is 3-40 weight % and preferably 5-30 weight % based on the total weight of the whole detergent composition.

5 The amount of hinokitiol or a salt thereof is not critical only if its preservative efficacy can be fully exploited, thus being preferably not less than 0.001 weight % and, for still better results, 0.001-10.0 weight % based on the whole detergent composition.

10 When the composition containing hinokitiol or a salt thereof as the preservative is packed in a light-opaque polyester container, the preservative is protected against decomposition and sustains its low concentration level, so that when this preservative is used in
15 combination with said surfactant or surfactants, there is obtained a detergent composition with remarkably reduced irritancy and improved detergent and preservative effects.

 This composition A (hypoirritant detergent composition) may be supplemented with a compound of the
20 following general formula (3).

General formula (3):



[wherein R⁶ represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R⁸ represents a hydrogen atom or CH₂COOR⁹; R⁷ and R⁹ each represents an alkali metal such as sodium, potassium, etc., an alkaline earth metal such as magnesium etc., or a metal ion such as copper, zinc, etc.; m is equal to 1 or 2; Z represents OH, C₁₂H₂₅OSO₃, or C₁₁H₂₃CON(CH₃)CH₂COO].

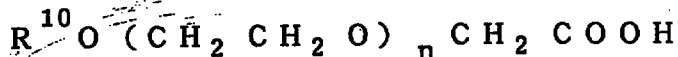
By adding the compound of general formula (3), the irritation effect of the composition on the ocular mucosa, for instance, can be mitigated.

Preferred species of the above compound of general formula (3) are coco-alkyl-N-carboxymethoxyethyl-N-carboxymethylimidazolium disodium hydroxide, coco-fatty acid N-carboxymethoxyethyl-N-carboxymethylimidazolinium disodium laurate and lauryl N-carboxymethoxyethyl-N-carboxymethyl-imidazolium disodium dodecanoylsarcosine, etc. Among them, coco-alkyl-N-carboxymethoxyethyl-N-carboxymethylimidazolium disodium hydroxide is most preferable. The amount of the compound of general formula (3) is preferably about 10-200 weight % relative

to the anionic surfactant of general formula (1).

This composition A may be further supplemented with a compound of the following general formula (4).

An anionic surfactant of general formula (4):



5 [wherein R^{10} represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; n is a whole number satisfying the relation $1 \leq n \leq 10$] or a salt thereof.

By adding a compound of the above general formula (4) to the hypoirritant composition A, a
10 reduction in degreasing power in addition to hypoirritancy can obtained.

Referring to the above general formula (4), the saturated or unsaturated hydrocarbon radical of not more than 40 carbon atoms, as designated by R^{10} , includes the
15 hydrocarbon radicals mentioned in the definitions of general formulas (1) and (2). Particularly preferred are coco-alkyl radicals and saturated hydrocarbon radicals of 9-13 carbon atoms, such as undecyl and tridecyl.

Mixtures of surfactants of general formula (4)
20 can also be used, regardless of whether their substituent groups are the same or different.

The salt of the surfactant of general formula (4) includes a variety of inorganic salts, e.g. alkali metal salts such as sodium salt, potassium salt, etc.,

alkaline earth metal salts such as magnesium salt etc., metal salts such as copper salt, zinc salt, etc., and organic salts including alkanolamine salts such as diethanolamine salt, 2-amino-2-ethyl-1,3-propanediol salt, triethanolamine salt, etc., heterocyclic amine salts such as morpholine salt, piperazine salt, piperidine salt, etc., ammonium salts, and salts with basic amino acids, such as arginine salt, lysine salt, histidine salt, etc. As the basic amino acid, both the D-compound and the L-compound as well as various mixtures thereof can all be employed.

When composition A is supplemented with the surfactant of general formula (4), the degreasing power of the composition is mitigated so that the dryness and stiffness of the skin can be decreased.

In this composition A, the ratio of the total amount of said anionic surfactant of general formula (1) and amphoteric surfactant of general formula (2) to the amount of the surfactant of general formula (4) is generally 1:20-20:1 by weight, preferably 4:1-1:4 by weight, and for still better results, 4:1-1:2 by weight.

In this composition A, too, the above-mentioned other components can be incorporated in addition to said surfactants (1)-(4). However, care should be used to prevent excessive increase in the irritation potential of

composition A. For use as a detergent composition for patients with atopic dermatitis, a formulation with a dermal irritation index, which is described hereinafter, of not more than about 15 is preferred. For use as a
5 detergent composition for healthy persons, a formulation with a dermal irritation index of not more than about 30 is preferred.

While this composition A can be used within the above-mentioned pH range for cosmetic preparations, the
10 preferranged range is pH about 6.0-7.5.

Of course, where necessary, the composition may be used after extemporaneous dilution.

This composition A is not only extremely low in irritation potential but is fully satisfactory in the
15 essential performance parameters of a detergent, namely foaming and detergent properties, so that it can be safely applied to patients with skin disease such as atopic dermatitis, not to speak of healthy persons.

Another example of the polyester-packed
20 hinokitiol-containing detergent composition is a detergent composition comprising at least one member selected from the group consisting of said anionic surfactant of general formula (1) or salt thereof and said amphoteric surfactant of general formula (2), not
25 less than 0.001 weight % of a preservative selected from

among hinokitiol and its salt, 0.3-5 weight % of maltitol, and 0.5-5 weight % of polyethylene glycol with an average molecular weight of 4000-15000 and having a pH value within the range of 6.0-8.0 as filled in a light-opaque polyester container (hereinafter referred to as composition B).

This composition B features rich lather, good foam quality (e.g. delicate foam, bulky foam, etc.), ease of rinse, good feeling (e.g. not sticky, moist and supple feel, no stiff feel after use) and high stability, and is a hypoirritant detergent composition which can be safely used for patients with skin disease such as atopic dermatitis or acne vulgaris (pimples).

The preferred species of the lower alkyl radical, saturated or unsaturated hydrocarbon radical of not more than 40 carbon atoms and lower alkylene radical, which constitute the above composition B, and the preferred combination thereof are already mentioned hereinbefore.

The ratio of the anionic surfactant of general formula (1) to the amphoteric surfactant of general formula (2) in this detergent composition (B) is generally 1:20-20:1, preferably 4:1-1:3 and, for still better results, 4:1-2:3. These surfactants are used in sufficient amounts to provide for the needed cleansing

action. Thus, the total amount of said anionic surfactant of general formula (1) and amphoteric surfactant of general formula (2) is about 1-80 weight %, preferably about 5-30 weight %, of the whole composition.

5 There is no particular limitation on the amount of hinokitiol or a salt thereof, provided only that a sufficient preservative action can be insured. Generally speaking, its proportion is preferably not less than 0.001 weight % and, for still better results, 0.001-10.0
10 weight % of the whole composition.

Maltitol as the humectant component is added at the level of 0.3-5 weight %, preferably 0.5-3 weight %, relative to the whole detergent composition.

As the polyethylene glycol, one with an average
15 molecular weight of 4000-15000, preferably 4000-10000, is used and added at the level of generally 0.5-5 weight % and preferably 1-3 weight % of the whole detergent composition.

Where necessary, various other known components
20 in common use in detergents can be added to this detergent composition B in amounts which do not adversely affect the performance of the composition. For example, polyoxyethylene mono- and/or distearate can be added. This component provides for a still more delicate foam
25 assuring a better feel. Lauric diethanolamide can also

be added for increased foam volume.

Though this is not essential, humectants other than maltitol can also be added to composition B.

However, in such cases, the total amount of the humectant component inclusive of maltitol is preferably not more than 10 weight % of the whole composition. Among such humectants are the polyhydric alcohols and sugars mentioned hereinbefore and the most desirable is glycerol. When glycerol is used in combination with maltitol, the preferred proportion of maltitol is 5-100% of the whole humectant component.

This composition B can also be used within the pH range which is suited for cosmetic products in general. The preferred range is pH about 6.0-8.0.

The dosage or application form of this composition B is not critical, either. Thus, the composition can be used in various known forms, typically liquid shampoos. Of course, where necessary, the composition B can also be put to use after extemporaneous dilution with water.

A further example of the polyester-packed hinokitiol-containing composition is a composition comprising a zinc compound, at least one member selected from among hinokitiol and its salt, and an anti-bacterial/antifungal agent as filled in a light-opaque

polyester container (hereinafter referred to as composition C).

It was found that zinc a compound such as zinc oxide in combination with hinokitiol or a salt thereof results in enhanced antibacterial and antifungal activity and that because of this enhanced antibacterial and antifungal activity, this combination is of great use for the treatment of infections due to bacteria or fungi and the preservation of cosmetic preparations.

Thus, with this composition C, there can be provided an antibacterial/antifungal preparation comprising a liquid, gel, ointment, cream or oil containing an effective amount of said zinc compound and an effective amount of hinokitiol or a salt thereof as packed in a light-opaque polyester container or preferably an antibacterial/antifungal preparation or cosmetic preparation comprising said composition as filled in a polyethylene-lined light-opaque polyester tube.

The zinc compound mentioned above need not be particularly critical in type but can be liberally selected from among the known compounds, among which may be mentioned zinc oxide, zinc chloride, zinc nitrate, zinc sulfate, zinc phosphate, zinc aluminate, zinc fluoride, zinc iodide, zinc hydroxide, zinc carbonate,

zinc chromate, zinc benzoate, zinc acetate, zinc
paraaminobenzoate, zinc paradimethylaminobenzoate, zinc
paraphenolsulfonate, zinc paramethoxycinnamate, zinc
lactate, zinc-2-mercaptopyridine-N-oxide complex, zinc
5 gluconate, zinc picrate, zinc citrate, zinc aspartate,
zinc naphthenate, zinc salicylate, zinc phenolsulfonate,
zinc sebacate, sodium zinc tripolyphosphate, zinc
stearate, zinc caprate, zinc laurate, zinc myristate,
zinc palmitate, zinc oleate, zinc polyphosphonate, zinc
10 chondroitinsulfate, zinc undecylenate, zinc ascorbate,
zinc pyrithione, hinokitiolato zinc, zinc dipicolinate,
zinc-glycerol complex, zinc-bis(histidine) complex, zinc-
3,4-dihydroxybenzoic acid complex, zinc nicotinate, zinc-
nicotinamide complex, and other zinc complexes and zinc
15 salts. The preferred zinc compounds are zinc stearate,
zinc pyrithione, zinc myristate, zinc palmitate, zinc
laurate, zinc chloride, zinc sulfate, and zinc oxide.
The most desirable is zinc oxide.

In the present invention, these zinc compounds
20 can be used independently or in combination.

As the salt of hinokitiol, any of the various
salts mentioned hereinbefore can be used, although the
sodium salt, L-arginine salt and copper salt of
hinokitiol are particularly preferred as well as the free
25 form of hinokitiol.

The proportion of said zinc compound relative to hinokitiol or a salt thereof in the composition of the present invention in the form of an topical preparation or a cosmetic preparation is not so critical only if the
5 expected effect of the invention can be implemented.

Generally, however, it is good practice to use the zinc compound in a proportion of about 0.05-99.95 weight %, preferably about 10-99.95 weight %, or most desirably about 50-99.9 weight % and hinokitiol or a salt thereof
10 in a proportion of about 99.95-0.05 weight %, preferably about 90-0.05 weight %, and most desirably about 50-0.1 weight %, both based on the combined weight of the zinc compound and hinokitiol or a salt thereof.

This composition C can be provided and used as
15 a one-package preparation containing both the zinc compound and hinokitiol or a salt thereof or as a two-package preparation consisting of two packages containing said components, respectively. This composition C can also be provided in any of the dosage forms or
20 application forms mentioned for drug products, quasi-drug products and cosmetic products.

A preparation for topical application is most suited because the antibacterial and antifugal actions of composition C can be best exploited.

25 When composition C is used for medical

purposes, its amount is not particularly restricted insofar as the expected efficacy can be expressed. Thus, the combined amount of the zinc compound and hinokitiol or a salt thereof may be generally about 0.001-20 weight
5 %, preferably about 0.01-15 weight % and, for still better results, about 0.01-10 weight %.

In the preparation for extemporaneous dilution, the combined amount of the zinc compound and hinokitiol or a salt thereof is generally about 0.001-100 weight %
10 and preferably about 0.001-50 weight %.

For use of this composition C as a cosmetic preparation, the concentration should vary with different application forms but the combined amount of the zinc compound and hinokitiol or a salt thereof is generally
15 about 0.0001-99.9 weight % and preferably about 0.001-30 weight %. The above composition C can be diluted with water, olive oil or a suitable solvent before application. There is no restriction on the method of application of composition C just as mentioned for the
20 other compositions.

The daily dose of composition C for an average adult may be about 1-20 mg/kg body weight in terms of the combined amount of the zinc compound and hinokitiol or a salt thereof and this amount can be administered once or
25 in 2-3 divided doses daily.

When composition C is to be used as an antiseptic or disinfectant, the amounts of the zinc compound and hinokitiol or a salt thereof in composition C are not critical only if the anticipated effect
5 according to the present invention can be accomplished. Thus, the concentration of the zinc compound in composition C is generally about 0.00005-99 weight % and preferably about 0.001-30 weight % and the concentration of hinokitiol or a salt thereof is generally about
10 0.00005-50 weight % and preferably about 0.001-20 weight %.

In addition to the above effective components, composition C may contain a variety of known additives.

External or topical dosage forms of composition
15 C can be applied by the conventional means mentioned hereinbefore. The composition C of the present invention has excellent antibacterial and antifungal activities and is particularly useful in the treatment of various infectious diseases caused by various bacteria and/or
20 fungi, for example various skin diseases including dermatitis such as atopic dermatitis, seborrheic dermatitis, nummular dermatitis, autosensitization dermatitis, diaper dermatitis and stasis dermatitis, eczema such as housewives (hand) eczema and dry eczema,
25 pustular psoriasis, burn, redness resulting from burn,

impetigo, rash, miliaria, sore, abrasion, secondary infection through scratching, etc.

In addition, the composition C of the invention is very low in skin irritancy and allergy-inducing potential and therefore can be applied not only to babies, infants, children and other patients with skin diseases, for example patients susceptible to skin irritation, but also in the treatment of skin diseases in mammals other than humans (pet animals such as dogs, cats, etc., domestic animals such as cattle, horses, etc., and so on).

The composition C of the invention possesses excellent antibacterial and antifungal activities, is safe and very weak in irritancy, and can be suitably used in babies, infants, children and other patients with skin diseases, patients susceptible to irritation and so forth. The composition C of the invention can also be suitably used in patients with atopic dermatitis or contact dermatitis.

Composition C of the present invention is a composition having high antibacterial activity against a broad spectrum of gram-positive and gram-negative bacteria, with a low toxic potential and a minimal risk of adverse reactions. Particularly, this composition displays very potent antibacterial activity against gram-

positive bacteria such as Staphylococcus sp.,
Streptococcus sp., Corynebacterium diphtheria,
Mycobacterium tuberculosis, Clostridium sp., etc., gram-
negative bacteria of the genera Neisseria, Escherichia,
5 Citrobacter, Salmonella, Shigella, Klebsiella,
Pseudomonas, etc., anaerobic bacteria of the genera
Clostridium, Peptococcus, Peptostreptococcus,
Propionibacterium, Bacteroides, etc., zygomycetes
inclusive of Mucor sp., ascomycetes inclusive of
10 Aspergillus sp. and Penicillium sp., fungi imperfecti
inclusive of Cryptococcus sp., Candida sp., derma-
tophytes, Pityrosporum sp., and other microorganisms.

Furthermore, composition C of the present
invention is highly active against resistant strains and
15 clinical isolates which are resistant to various
antibiotics such as penicillins, cepheems, quinolones,
aminoglycosides, macrolides and tetracyclines, too.
Particularly, composition C is prominently bactericidal
against MRSA and MRSE. Moreover, the composition of the
20 present invention is effective against MRSA and MRSE
strains which are additionally resistant to quinolone,
aminoglycoside, macrolide and/or tetracycline antibiotics
as well.

Furthermore, because the combined use of the
25 zinc compound and hinokitiol or a salt thereof inhibits

inversion of hinokitiol or a salt of hinokitiol in staphylococci and certain other bacteria, the bactericidal effect of hinokitiol or a salt thereof can be further enhanced.

5 Composition C of the present invention is a very safe antibacterial/antifungal agent which is also satisfactory in absorption and excretion kinetics.

A still another example of the polyester-packed hinokitiol-containing composition as a pharmaceutical or
10 cosmetic preparation is an antimicrobial composition comprising at least one member selected from the group consisting of copper compounds, hinokitiol and salts of hinokitiol as packed in a light-opaque polyester container (hereinafter referred to as composition D).

15 Thus, composition D can be an antimicrobial or cosmetic preparation comprising an antimicrobial composition comprising an effective amount of a copper compound and an effective amount of hinokitiol or a salt thereof as filled in a light-opaque polyester container,
20 preferably an adhesive polyethylene-lined light-opaque polyester tube.

The copper compound for use in this composition D is not particularly restricted in kind but can be liberally selected from among the known compounds, e.g.
25 copper(I) chloride, copper(II) acetate, copper(II)

ammonium chloride, copper(I) bromide, copper(II) bromide,
copper(I) bromide-dimethyl sulfide complex, copper(II)
carbonate, copper(II) citrate, copper(I) cyanide, copper
4-cyclohexylbutyrate, copper(II) diammonium chloride,
5 copper(II) diphosphate, copper(II) fluoride, copper(II)
formate, copper(II) gluconate, copper(II) hydroxide,
copper(I) iodide, copper naphthenate, copper(II) nitrate,
copper(II) oleate, copper(I) oxalate, copper(II) oxide,
copper(II) phosphate, copper(II) phthalate, copper(II)
10 potassium chloride, copper(I) rhodanide, copper (II)
sulfate, copper(II) sulfide, copper(I) thiocyanate,
copper chlorophyll, copper hinokitiol, copper nicotinate
compounds, copper nicotinamide compounds, copper
picolinate compounds, copper picolinamide compounds, and
15 copper salts and copper complex salts of compounds
selected from among amino acids and peptides. In the
practice of the present invention, these compounds can be
used independently or in combination.

In composition D, the salt of hinokitiol may be
20 any of the salts mentioned hereinbefore.

The amounts of said copper compound and said
hinokitiol or salt thereof are not particularly critical
only if the desired effect can be accomplished.
Generally speaking, on the basis of the total amount of
25 the copper compound and hinokitiol or a salt thereof, the

proportion of the copper compound is about 0.05-99.95 weight %, preferably about 10-99.95 weight %, and for still better results, about 50-99.9 weight % and the proportion of hinokitiol or a salt thereof is about
5 99.95-0.05 weight %, preferably about 90-0.05 weight %, and for still better results, about 50-0.1 weight %.

This composition D can be provided and used as a one-packaged preparation containing both the copper compound and hinokitiol or a salt thereof or as a two-
10 package preparation consisting of two packages containing said components, respectively.

This composition D can also be provided in any of the dosage or application forms mentioned for drug products, quasi-drug products and cosmetic products.

15 A preparation for topical application is most suited because the antimicrobial action of composition D can be best exploited.

When composition D is used for medical purposes, its amount is not particularly restricted
20 insofar as the expected efficacy can be exploited. Thus, the total amount of the copper compound and hinokitiol or a salt thereof may be generally about 0.001-20 weight %, preferably about 0.01-15 weight % and, for still better results, about 0.01-10 weight %.

25 In the preparation for extemporaneous dilution,

the total amount of the copper compound and hinokitiol or a salt thereof is generally about 0.001-100 weight % and preferably about 0.001-50 weight %.

For use of this composition D as a cosmetic,
5 the concentration should vary with different application forms but the total amount of the copper compound and hinokitiol or a salt thereof is generally about 0.0001-99.9 weight % and preferably about 0.001-30 weight %.

The above composition D can be diluted with
10 water, ethanol, olive oil, liquefied gas or a suitable solvent before application.

There is no restriction on the method of application of composition D just as mentioned for the other compositions.

15 The daily dose of composition D for an average adult may be about 1-20 mg/kg body weight in terms of the total amount of the copper compound and hinokitiol or a salt thereof and this amount can be administered once or in 2-3 divided doses daily.

20 When composition D is to be used as an antiseptic or disinfectant, the amounts of the copper compound and hinokitiol or a salt thereof in composition D are not critical provided only that the anticipated effect according to the present invention can be
25 accomplished. Thus, the concentration of the copper

compound in composition D is generally about 0.00005-99 weight % and preferably about 0.001-30 weight % and the concentration of hinokitiol or a salt thereof is generally about 0.00005-50 weight % and preferably about
5 0.001-20 weight %.

In addition to the above effective components, composition D may contain a variety of known additives.

External dosage forms of composition D can be applied by the conventional means mentioned hereinbefore.

10 Composition D of the present invention has excellent antimicrobial activity and is particularly useful in the treatment of various infectious diseases caused by various microorganisms, for example various skin diseases including dermatitis such as atopic
15 dermatitis, seborrheic dermatitis, nummular dermatitis, autosensitization dermatitis, diaper dermatitis and stasis dermatitis, eczema such as housewives (hand) eczema and dry eczema, pustular psoriasis, burn, redness resulting from burn, impetigo, rash, miliaria, sore,
20 abrasion, secondary infection through scratching, etc.

In addition, composition D of the present invention is very low in skin irritation and allergy-inducing potentials and therefore can be applied not only to babies, infants, children and other patients with skin
25 diseases, for example patients susceptible to skin

irritation, but also in the treatment of skin diseases in mammals other than humans (pet animals such as dogs, cats, etc., domestic animals such as cattle, horses, etc.).

5 This composition D of the present invention possesses excellent antimicrobial activity, is stable against light such as UV light, and least irritating, and can be suitably used in babies, infants, children and other patients with skin disease, patients susceptible to
10 irritation and so forth. Composition D of the present invention can also be suitably used in patients with atopic dermatitis or contact dermatitis.

Composition D of the present invention is a composition having high antimicrobial activity against a
15 broad spectrum of gram-positive and gram-negative bacteria, with a low toxic potential and a minimal risk of adverse reactions. Particularly, this composition displays very potent antimicrobial activity against gram-positive bacteria such as Staphylococcus sp.,
20 Streptococcus sp., Corynebacterium diphtheriae, Mycobacterium tuberculosis, Clostridium sp., etc., gram-negative bacteria of the genera Neisseria, Escherichia, Citrobacter, Salmonella, Shigella, Klebsiella, Pseudomonas, etc., anerobic bacteria of the genera
25 Clostridium, Peptococcus, Peptostreptococcus,

Propionibacterium, Bacteroides, etc., zygomycetes inclusive of Mucor sp., ascomycetes inclusive of Aspergillus sp. and Penicillium sp., fungi imperfecti inclusive of Cryptococcus sp., Candida sp.,
5 dermatophytes, Pityrosporum sp., and other microorganisms. The composition is not only active against standard strains but also active against clinically isolated strains.

Furthermore, composition D of the present
10 invention is highly active against resistant strains and clinical isolates which are resistant to various antibiotics such as penicillins, cepheems, quinolones, aminoglycosides, macrolides and tetracyclines, too. Particularly, composition D is prominently bactericidal
15 against MRSA and MRSE. Moreover, composition D of the present invention is effective against MRSA and MRSE strains which are additionally resistant to quinolone, aminoglycoside, macrolide and/or tetracycline anti
biotics as well.

20 Furthermore, because the combined use of the copper compound and hinokitiol or a salt thereof inhibits inversion of hinokitiol or a salt of hinokitiol in staphylococci and certain other bacteria, the bactericidal effect of hinokitiol or a salt thereof can be
25 further enhanced.

A further example of the polyester-packed hinokitiol-containing composition as a pharmaceutical or cosmetic preparation is a liquid, gel, ointment, cream or oil comprising a hydrocarbon and a fatty acid ester in addition to hinokitiol or a salt thereof (hereinafter referred to as composition E) as filled in a light-opaque polyester container.

This composition E is least sticky and features good feel, efficient transdermal absorption, good moisture-retaining properties and weak dermal irritation. It prevents drying of the skin and because of being not occlusive, contributes to the protection of the skin. Therefore, by applying it to the affected site by coating or as a patch once or twice a day, it exhibits efficacy against skin diseases such as pediatric dry eczema, diaper rash, infantile seborrheic eczema, and so forth. It is particularly useful for the treatment of atopic dermatitis. Moreover, composition E prevents secondary infections in skin diseases and the composition itself is least susceptible to microbial infection.

The hydrocarbon for use in this composition E can be a straight-chain or branched saturated or unsaturated hydrocarbon of 16-70 carbon atoms, preferably 16-38 carbon atoms.

The hydrocarbon may be solid, semi-solid or

liquid at ordinary temperature, although it is preferably a liquid one. Moreover, these hydrocarbons can be used independently or in combination.

Among preferred hydrocarbons are liquid
5 paraffin, light liquid paraffin, light liquid
isoparaffin, heavy liquid isoparaffin, squalane (hexamethyltetracosane), squalene (hexamethyltetracosahexaene), pristane, petrolatum, yellow petrolatum, white petrolatum, synthetic hydrocarbon wax, α -olefin
10 oligomers, ceresine, paraffin, partially hydrogenated squalene, microcrystalline wax, polyethylene powder, and so on. Particularly preferred is squalane (hexamethyltetracosane).

The proportion of said hydrocarbon relative to
15 the total amount of composition E is 1-90 weight %, preferably 20-90 weight %.

The fatty acid ester is not particularly restricted in kind only if the constituent fatty acid is one that is commonly used in the pharmaceutical and cosmetic
20 industries. Generally speaking, a straight-chain or branched saturated or unsaturated hydrocarbon of 3-40 carbon atoms is preferred and a straight chain- or branched saturated or unsaturated hydrocarbon of 8-20 carbon atoms is still more preferred.

25 The alcohol for constituting the fatty acid

ester is not particularly restricted only if it is an alcohol generally employed and may be a monohydric alcohol or polyhydric alcohol. It may be cholesterol as well. However, straight-chain or branched saturated or unsaturated monohydric alcohols of 1-40 carbon atoms and polyhydric alcohols of 2-40 carbon atoms are preferred. Particularly preferred are straight-chain or branched saturated or unsaturated monohydric alcohols of 2-20 carbon atoms and polyhydric alcohols of 3-6 carbon atoms.

10 The fatty acid ester, thus, includes avocado oil fatty acid ethyl ester, ethyl isostearate, ethyl oleate, mink oil fatty acid ethyl ester, ethyl linolate, isopropyl linolate, isopropyl palmitate, isopropyl myristate, isopropyl isostearate, butyl stearate, butyl

15 myristate, hexyl isostearate, batyl isostearate, iso-stearyl isostearate, isocetyl isostearate, isodecyl isononanoate, tridecyl isononanoate, isononyl isononanoate, 2-ethylhexyl isopalmitate (octyl isoparmitate), 2-ethylhexyl isopelargonate, cetostearyl α -

20 ethylcaproate, octyldodecyl cis-13-docosenoate (octyldodecyl erucate), 2-ethylhexyl hydroxystearate, isostearyl 2-ethylhexanoate (isostearyl octanoate), isocetyl 2-ethylhexanoate, stearyl 2-ethylhexanoate, cetyl 2-ethylhexanoate, cetostearyl 2-ethylhexanoate,

25 decyl oleate, isodecyl oleate, octyldodecyl oleate, oleyl

oleate, cetyl caprylate, octyldodecyl dimethyloctanoate,
isocetyl stearate, 2-ethylhexyl stearate, stearyl
stearate, batyl stearate, cholesteryl stearate,
octyldodecyl lactate, isostearyl palmitate, cetyl
5 palmitate, isocetyl palmitate, 2-ethylhexyl palmitate,
isostearyl myristate, cetyl myristate, isocetyl
myristate, isotridecyl myristate, octyldodecyl myristate,
decyl myristate, myristyl myristate, isostearyl laurate,
hexyl laurate, octyldodecyl neodecanoate, lanolin, liquid
10 lanolin, reduced lanolin (hydrogenated lanolin), beeswax,
spermaceti, diisopropyl sebacate, diethyl sebacate,
diisopropyl adipate, propylene glycol didecanoate,
glyceryl isostearate, mixed fatty acid triglyceride,
lipophilic glycerin monooleate, lipophilic glycerin
15 monostearate, glyceryl stearate malate, glyceryl
triisostearate, glyceryl triundecylate, glyceryl tri-2-
ethylhexanoate (octanoate), glyceryl tri-2-hexyldecano-
ate, glyceryl tri(caprylate caprate), tri(caprylic,
capric, myristic, stearic) glyceryl ester, glyceryl
20 tricaprylate, glyceryl tripalmitate, tri(castor oil fatty
acid-olive oil fatty acid) glyceride, glyceryl
tribehenate, trimethylolpropane tri-2-ethylhexanoate
(octanoate), trimethylolpropane triisostearate,
pentaerythritol tetra-2-ethylhexanoate, tri-coco-fatty
25 acid glyceryl ester, tri-hydrogenated palm oil fatty acid

glyceryl ester, tri-beef tallow fatty acid glyceryl ester, tri(hydrogenated beef tallow fatty acid) glyceryl ester, tri-medium length fatty acid glyceryl ester, avocado oil, olive oil, safflower oil, sweet almond oil, 5 corn oil, macadamia nut oil, sazanaka oil, jojoba oil, sunflower oil, camellia oil, orange raphie oil, meadow-foam oil, etc. among other esters.

These esters may be solid, semi-solid or liquid at ordinary temperature but liquid esters are preferred.

10 The esters can be used independently or in combination.

It is particularly preferable to employ a fatty acid ester consisting of a straight-chain or branched saturated or unsaturated fatty acid of 8-20 carbon atoms and a straight-chain or branched saturated or unsaturated 15 monohydric alcohol, preferably cetyl isooctanoate, in combination with a fatty acid ester consisting of a straight-chain or branched saturated or unsaturated C_{8-20} fatty acid and glycerin, e.g. preferably a tri-fatty acid glyceryl ester, more preferably glyceryl trioctanoate, 20 among others. The recommended ratio of the former ester to the latter ester is 1:0-10:1, preferably 2:1-1:2.

The proportion of these esters relative to the total weight of composition E may be 1-90 weight %, preferably 20-90 weight %.

25 In composition E, the salt of hinokitiol may be

any of the salts mentioned hereinbefore.

The proportion of hinokitiol or a salt thereof relative to the total weight of composition E may be 0.0001-20 weight %, preferably 0.001-10 weight %.

5 Where necessary, composition E may also be supplemented with the various components mentioned hereinbefore within the range not detracting from its performance. The usefulness of composition E in diseases of the skin, particularly atopic dermatitis, can be
10 further enhanced by adding a compound of zinc or copper, particularly zinc oxide.

In the case of composition E, too, when packed in a polyester container, hinokitiol or a salt thereof that is contained does not emigrate through the con
15 tainer wall and when the container material contains a light-barrier agent, it is not decomposed by the light-barrier agent, nor is it adsorbed or stuck to the container, so that the inherent antiseptic effect of hinokitiol is fully preserved and the usefulness of said
20 composition E is enhanced. Moreover, the product remains stable for a long time and is very safe.

A still another example of the polyester packed hinokitiol-containing composition of the present invention in the form of a pharmaceutical or cosmetic
25 product is a liquid, gel, ointment, cream or oil

comprising one or more members selected from the group consisting of polyhydric alcohol, sugar, sugar alcohol and polyhydric alcohol alkyl ether, ethanol and pantothenyl alcohol together with hinokitiol or a salt thereof (hereinafter referred to as composition F) as
5 packed in a light-opaque polyester container.

This composition F is least sticky and features good feel, efficient transdermal absorption, good moisture-retaining properties and weak dermal irritation.
10 It prevents drying of the skin and because of being not occlusive, contributes to the protection of the skin. Therefore, by applying it to the affected site by coating or as a patch once or twice daily, it exhibits efficacy against skin diseases such as pediatric dry eczema,
15 diaper rash, infantile seborrheic eczema, and so forth. It is particularly useful for the treatment of atopic dermatitis. Moreover, composition F prevents secondary infections in skin diseases and the composition itself is least susceptible to microbial infection. This
20 composition is good in antidandruff efficacy, too.

The polyhydric alcohol that can be used in this composition includes a variety of alcohols in common use in the art and is not particularly restricted. The recommended polyhydric alcohol is a straight-chain or
25 branched saturated or unsaturated alcohol of 2-10000

carbon atoms and preferably a straight-chain or branched saturated or unsaturated alcohol of 3-6 carbon atoms.

Thus, said polyhydric alcohol includes but is not limited to ethylene glycol (C_2), diethylene glycol (C_4), triethylene glycol (C_6), polyethylene glycol (200-400000) (C_2)_n, 1,3-butylene glycol (C_4), propylene glycol (C_3), dipropylene glycol (C_6), hexylene glycol (C_6), polypropylene glycol (400-1200) (C_3)_n, glycerin (C_3), diglycerin (C_6), tetramethyl trihydroxy hexadecane (C_{20}) and pentaerythritol (C_5). Particularly preferred is glycerin.

The sugar that can be used in composition F is not restricted only if it is one in common use in the art. Thus, any of monosaccharides, polysaccharides, and amino sugars, among others, can be employed. Among typical examples of the sugar are D-erythrose, D-treose, D-arabinose, D-ribose, D-mannose, D-galactose, fructose, L-sorbose, L-rhamnose, L-rhodoose, D-ribodesose, D-xylose, glucosamine, fructosamine, trehalose, saccharose, cellobiose, gentiobiose, melibiose, raffinose, gentianose, melezitose, stachyose, black sugar, mixed isomerized sugar (dilute alkali-treated glucose: dilute alkali-treated lactose = 19:1], sucrose, simple syrup (sucrose 85%], lactose, glucose and maltose, to name but a few. Particularly preferred are saccharose and

maltose.

The sugar alcohol that can be used in this composition F is not particularly restricted. Thus, any of the sugar alcohols in common use in the art can be
5 employed.

Thus, said sugar alcohol includes but is not limited to erythritol, D-threitol, L-arabinitol, adonitol, xylitol, L-sorbitol, D-sorbitol, D-mannitol, dulcitol, L-rhamnitol, maltitol and trigluco-
10 poly-saccharides. Particularly preferred in D-sorbitol.

The polyhydric alcohol alkyl ether for use in this composition F is not particularly restricted but can be any of those species which are in common use in the art. The preferred polyhydric alcohol alkyl ether is
15 such that its polyhydric alcohol moiety is a straight-chain or branched saturated or unsaturated alcohol of 2-40 carbon atoms and its ether-forming alkyl radical is a straight-chain or branched alkyl group of 2-40 carbon atoms. Particularly preferred is a polyhydric alcohol
20 alkyl ether such that its polyhydric alcohol moiety is a straight-chain or branched saturated or unsaturated alcohol of 2-6 carbon atoms and its alkyl moiety is a straight-chain or branched alkyl group of 2-20 carbon atoms.

25 The polyhydric alcohol alkyl ether thus

includes but is not limited to ethylene glycol ethyl ether, diethylene glycol ethyl ether, ethylene glycol methyl ether, ethylene glycol monobutyl ether, glyceryl monocetyl ether, glyceryl monostearyl ether, glyceryl monoley ether, diglyceryl oleyl ether, batyl monostearate and batyl monoisostearate. Particularly preferred are glyceryl monostearate and batyl monostearate.

From among these polyhydric alcohol, sugar, sugar alcohol, and polyhydric alcohol alkyl ether, one or more of them are selected and used. It is preferable to select one or more species of polyhydric alcohol. Particularly preferred is concentrated glycerin.

The proportion of these components relative to the total weight of composition F is 0.1-50 weight %, preferably 0.5-10 weight %.

The proportion of ethanol which is incorporated together with said polyhydric alcohol and other components in composition F is 0.1-70 weight %, preferably 1-50 weight %, relative to the total weight of composition F.

The proportion of another component pantothenyl alcohol is 0.01-10 weight %, preferably 0.1-5 weight %, based on the total weight of composition F.

In composition F, the salt of hinokitiol can be

any of the salts mentioned hereinbefore.

The proportion of hinokitiol or a salt thereof is 0.0001-20 weight %, preferably 0.001-10 weight %.

Where necessary, composition F may also be
5 supplemented with the various components mentioned hereinbefore within the range not detracting from its performance. The usefulness of composition F in diseases of the skin, particularly atopic dermatitis, can be further enhanced by adding a compound of zinc or copper,
10 particularly zinc oxide.

In the case of composition F, too, when packed in a polyester container, hinokitiol or a salt thereof that is contained does not emigrate through the container wall and when the container material contains a light-
15 barrier agent, it is not decomposed by the light-barrier agent, nor is it adsorbed or stuck to the container, so that the inherent preservative effect of hinokitiol is fully preserved and the usefulness of said composition F is enhanced. Moreover, the product remains stable for a
20 long time and is very safe.

EXAMPLES

The following examples and test examples are intended to describe the present invention in further detail and should by no means be construed as defining
25 the scope of the invention.

The containers used in the examples are as follows.

- . Bottle A (the invention) ... a polyester bottle
(polyester = manufactured by Mitsui Pet Resin, bottle
5 size = 200 ml, wall thickness = 0.5 mm)
- . Bottle B (control) ... a polyethylene bottle
(manufactured by Sumitomo Chemical; bottle size = 200 ml,
wall thickness = 0.5 mm)
- . Bottle C (control) ... a polypropylene bottle
10 (polypropylene = manufactured by Mitsui Petrochemical,
bottle size = 200 ml, wall thickness = 0.5 mm)

Example A-1

A shampoo composition of the following formula
was filled in bottle A.

15		(W/W %)
	Alaninate LN-30*	40.0
	Swanol AM-3130N**	10.0
	Hinokitiol	0.02
	99.5% Ethanol	0.8
20	pH control agent and sequestering agent	q.s
	Water to make 100 W/W% (pH 6.4)	

*: Alaninate LN-30: a surfactant based on sodium N-

lauroyl-N-methyl- β -alaninate, Nikko Chemicals

** : Swanol AM-3130N: a surfactant based on cocoyl amide-

25 propyldimethylaminoacetic acid betaine, Nikko Chemicals

Example A-2

A body shampoo composition of the following formula was filled in bottle A.

	(W/W %)
5 Alanon ACE*	8
Swanol AM-3130N	4
Hinokitiol triethanolamine salt	0.05
Nonionic surfactant**	2
Pearling agent***	2
10 pH control agent	q.s.
Perfume	q.s.
Metal chelating agent	q.s.
Water to make 100 W/W% (pH 6.4)	

*: Alanon ACE: a surfactant based on sodium N-cocoyl-N-methyl- β -aminopropionate, Kawaken Fine Chemicals

**: Nonionic surfactant: Emanon 3199 from Kao Corporation

***: Pearling agent: Estepearl 15 from Nikko Chemicals

Example A-3

20 A facial wash composition of the following formula was filled in bottle A.

	(W/W %)
Alanon ALE*	5
Swanol AM-3130N	5
25 Hinokitiol	0.1

	99.5% Ethanol	1.0
	Nonionic surfactant**	1.0
	Nonionic surfactant***	2.0
	pH control agent and glycerol	q.s
5	Water to make 100 W/W% (pH 7.4)	

*: Alanon ALE: a surfactant based on sodium N-lauroyl-N-methyl- β -aminopropionate, Kawaken Fine Chemicals

10 **: Nonionic surfactant: Amizet 5C, Kawaken Fine Chemicals

***: Nonionic surfactant: Emanon 3299, Kao Corporation

Exampel A-4

A swab detergent composition of the following formula was filled in bottle A.

15		(W/W %)
	Alaninate LN-30	2
	Alanon AME*	1
	pH control agent	q.s.
	Hinokitinol Na	1
20	99.5% Ethanol	3
	Water to make 100 W/W% (pH 7.0)	

*: Alanon AME: a surfactant based on sodium N-myristoyl-N-methyl- β -aminopropionate, Kawaken Fine Chemicals

Exampel A-5

	(W/W %)
Alanon ACE	15
Swanol AM-3130N	5
5 Hinokitiol triethanolamine salt	0.01
Hinokitiol L-arginine salt	0.001
pH control agent	q.s.
Color, perfume and glycerin	q.s.
Water to make 100 W/W% (pH 6.4)	
10 A ware detergent composition of the above formula was filled in bottle A.	

Example A-6

A shampoo composition of the following formula was filled in bottle A.

	(W/W %)
15 Alaninate LN-30	20.0
Swanol AM-3130N	7.0
Miranol C2M-NP HV*	7.0
Hinokitiol	0.03
20 99.5% Ethanol	1.0
Pearling agent, pH control agent and humectant	q.s
Water to make 100 W/W% (pH 7.2)	

*: Miranol C2M-NP HV: a surfactant based on

25 cocoalkyl-N-carboxymethoxyethyl-N-carboxy-

methylimidazolinium disodium hydroxide, Nikko
Chemicals

Example A-7

		(W/W %)
5	Alaninate LN-30	25.0
	Swanol AM-3130N	2.0
	Miranol C2M-NP HV	2.0
	Hinokitinol	0.03
	99.5% ethanol	1.5
10	Pearling agent, pH control agent and humectant	q.s
	Water to make 100 W/W% (pH 6.5)	

A body shampoo composition of the above formula
was filled in bottle A.

15 Example A-8

		(W/W %)
	Alaninate LN-30	32.0
	Swanol AM-3130N	5.0
	Hinokitinol	0.03
20	99.5% ethanol	3.0
	pH control agent and sequestering agent	q.s
	Water to make 100 W/W% (pH 6.4)	

A shampoo composition of the above formula was
filled in bottle A.

Example A-9

	(W/W %)
Alaninate LN-30	7.5
Swanol AM-3130N	5.5
5 Nikkol ECTD-3NEX [*]	2.3
Hinokitiol	0.04
99.5% Ethanol	0.5
pH control agent and pearling agent	q.s
Water to make 100.0	
10 (pH 6.8 for 10 W/W % aqueous solution)	

*: Nikkol ECTD-3NEX: a surfactant based on sodium POE(3) tridecyl ether carboxylate, Nikko Chemicals
A facial wash composition of the above formula was filled in bottle A.

15 Example A-10

	(W/W %)
Alaninate LN-30	40.0
Swanol AM-3130N	10.0
Hinokitiol	0.04
20 Nikkol ECTD-3NEX	0.88
pH control agent and metal chelating agent	q.s
Water to make 100.0	

(pH 6.8 for 10 W/W % aqueous solution)

A shampoo composition of the above formula was
25 filled in bottle A.

Example A-11

	(W/W %)
Alaninate LN-30	0.5
Swanol AM-3130N	2.0
5 Nikkol ECTD-6NEX *	17.6
Miranol C2M-NP HV	2.0
Hinokititol	0.01
Pearling agent, pH control agent and humectant	q.s.
10 Water to make 100.0	

(pH 7.0 for 10 W/W % aqueous solution)

*: Nikkol ECTD-6NEX: a surfactant based on sodium POE(6)
tridecyl ether carboxylate, Nikko Chemicals

A body shampoo composition of the above formula
15 was filled in bottle A.

Example B-1

	(W/W %)
Alaninate LN-30	27.0
Swanol AM-3130N	23.0
20 Maltitol	1.0
Polyethylene glycol 6000	1.5
Nonionic surfactant	9.0
pH control agent	0.3
Ethanol	2.0

Hinokitiol 0.03

Purified water to make 100 W/W %

(pH 7.2 for 10 W/W % aqueous solution)

A face wash composition of the above formula
5 was filled in tube B.

Tube B: A laminate tube manufactured by serial
lamination, in the order from the outermost layer to the
innermost layer, of polyethylene (150 μ m thick),
ethylene-methacrylic acid copolymer (EMAA, 30 μ m thick),
10 aluminum foil (20 μ m thick), polyester (15 μ m thick) and
polyethylene (100 μ m thick).

Example B-2

	(W/W %)
Alaninate LN-30	50.0
15 Swanol AM-3130N	45.0
Maltitol	0.3
Polyethylene glycol 6000	0.5
pH control agent	0.3
Ethanol	1.96
20 Hinokitiol	0.04

Purified water to make 100 W/W %

(pH 7.2 for 10 W/W % aqueous solution)

A facial wash composition of the above formula
was filled in bottle A.

Example B-3

	(W/W %)
Alaninate LN-30	8.0
Swanol AM-3130N	7.0
5 Maltitol	5.0
Polyethylene glycol 6000	5.0
Nonionic surfactant	11.0
pH control agent	0.3
Ethanol	2.0
10 Hinokitiol	0.04
Purified water to make 100 W/W %	

(pH 6.8 for 10 W/W % aqueous solution)

A facial wash composition of the above formula was filled in bottle A.

15 Example C-1 (Zinc oxide ointment)

Hinokitiol	0.5 g
Lard	200.0 g
Bleached beeswax	60.0 g
Zinc oxide	100.0 g
20 White petrolatum	q.s.
Total	1000.0 g

(1) Hinokitiol was weighed, and a portion of lard was added thereto, and the mixture was heated to about 40°C and stirred to give a homogeneous melt. (2)

25 The remaining portion of lard, bleached beeswax and white

petrolatum were melted on a water bath with stirring at 80°C to give a mixture. (3) Zinc oxide was weighed into a mortar. Thereto was added portionwise the mixture prepared in the above-mentioned step (2) with stirring to
5 give a homogenous mixture, which was then cooled to about 40°C with stirring. (4) Then, the mixture prepared in the above step (1) was added at about 40°C and stirring was continued until solidification occurred to give the desired zinc oxide ointment. This was filled in tube B.

10 Example C-2 (Zinc oxide ointment)

	Hinokitiol	0.1 g
	Olive oil	100.0 g
	Zinc oxide	100.0 g
	Simple ointment (Japanese Pharmacopoeia)	q.s.
15	Total	1000.0 g

(1) Hinokitiol was weighed. To this was added a portion of olive oil. The mixture was heated to about 40°C and stirred to give a homogeneous melt. (2) The remaining portion of olive oil and simple ointment
20 (Japanese Pharmacopoeia) were melted on a water bath with stirring at 80°C to give a mixture. (3) Zinc oxide was weighed into a mortar. Thereto was added portionwise with stirring the mixture prepared in the above step (2) to give a homogenous mixture, which was then cooled to
25 about 40°C with stirring. (4) Then, the mixture

prepared in the above step (1) was added at about 40°C, followed by stirring well until solidification occurred to give the desired zinc oxide ointment. This ointment was filled in tube B.

5 Example C-3 (Absorptive zinc oxide ointment)

	Lipophilic glycerin monostearate	50.0 g
	Zinc oxide	50.0 g
	White petrolatum	q.s.
	Hinokitiol sodium salt	0.05 g
10	Glycerin	30.0 g
	Purified water	50.0 g
	Total	1000.0 g

(1) Hinokitiol sodium salt, glycerin and purified water were heated to about 60°C and stirred to
15 give a homogeneous melt. (2) Lipophilic glycerin monostearate and white petrolatum were melted on a water bath and stirred at 60°C to give a mixture. (3) The mixture prepared in the above step (1) was added portionwise to the mixture prepared in the above step (2) with uniform
20 stirring. The whole mixture was then cooled to about 40°C with stirring. (4) Zinc oxide was weighed into a mortar. Thereto was added portionwise the mixture prepared in the above step (3), followed by thorough stirring until solidification occurred to give the
25 desired zinc oxide ointment. This ointment was filled in

tube B.

Example C-4 (Vanishing cream)

	Stearic acid	10.0%
	Paraffin wax (135F)	2.0%
5	Spermaceti	2.0%
	Cetyl alcohol	2.0%
	Cetyl isooctanoate	5.0%
	Polyoxyethylene sorbitan (20EO) monolaurate	3.0%
10	Zinc acetate	0.015%
	Sodium hydroxide	0.15%
	Concentrated glycerin	5.0%
	Hinokitiol	0.02%
	Perfume	q.s.
15	Purified water	Balance
	Total	100.0%

(1) Stearic acid, paraffin wax (135F), spermaceti, cetyl alcohol, cetyl isooctanoate and polyoxyethylene sorbitan (20EO) monolaurate were heated to 80-85°C to give a homogeneous melt. (2) Zinc acetate, sodium hydroxide, concentrated glycerin and purified water were heated to 80-85°C and stirred to give a homogeneous mixture. (3) At 80°C, the mixture prepared in the above step (2) was added portionwise to the mixture prepared in the above step (1) and, after

thorough emulsification, the whole mixture was cooled to 45°C with stirring. (4) At 45°C, hinokitiol and perfume were added to the mixture prepared in the above step (3), and the mixture was stirred to homogeneity and cooled to room temperature with stirring to give the desired vanishing cream. This cream was filled in tube B. Said vanishing cream was in the form of a stable emulsion.

Example C-5 (Cleansing cream)

	Bleached beeswax	3.0%
10	Liquid paraffin	30.0%
	Cetyl alcohol	2.0%
	Cetyl isooctanoate	10.0%
	Triethanolamine	0.2%
	Propylene glycol	5.0%
15	Zinc acetate	0.1%
	Antioxidant	q.s.
	Hinokitiol	0.05%
	Perfume	q.s.
	Purified water	Balance
20	Total	100.0%

The above ingredients were admixed for emulsification following the procedure of Example 4 to give a stable emulsion. This was filled in tube B.

Example C-6 (Milk lotion)

25	Stearic acid	3.0%
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	Spermaceti	3.0%
	Lipophilic glycerin monostearate	2.0%
	Bleached beeswax	2.0%
	Saturated fatty acid (C ₈ -C ₁₂) triglyceride	10.0%
5	L-Arginine	1.0%
	Sorbitol	3.0%
	Zinc pyrithione	0.02%
	Hinokitiol	0.02%
	Perfume	0.1%
10	Purified water	Balance
	Total	100.0%

The above ingredients were admixed for emulsification following the procedure of Example C-4, whereupon a stable emulsion was obtained. This was filled in bottle A.

Example C-7 (Lotion)

	Ethyl alcohol	10.0%
	Polyoxyethylene (9EO) lauryl ether	2.0%
	Kankoh SO 201	0.001%
20	Perfume	Suitable amount
	Concentrated glycerin	5.0%
	1,3-Butylene glycol	3.0%
	Hinokitiolato-zinc	0.05%
	Hinokitiol	0.05%
25	Color	Suitable amount

Purified water	Balance
Total	100.0%

(1) Polyoxyethylene (9EO) lauryl ether, Kankoh SO 201 and perfume were added to and uniformly dissolved in ethyl alcohol. (2) Concentrated glycerin, 1,3-butylene glycol and hinokitiolato-zinc were added to and uniformly dissolved in purified water. (3) At 80°C, the mixture prepared in the above step (2) was added to the mixture prepared in the above step (1) and, after thorough stirring for solubilization, hinokitiol was added and color was further added for coloration to give a lotion. This was filled in bottle A.

Example C-8 (Zinc oxide ointment)

Lard	20.95%
15 Bleached beeswax	7.0%
Lipophilic glycerin monostearate	2.0%
White petrolatum	60.0%
Zinc oxide	10.0%
Hinokitiol	0.05%
20 Total	100.0%

(1) Hinokitiol was weighed. To this was added a portion of lard and the mixture was heated to about 40°C and stirred to give a homogeneous melt. (2) The remaining portion of lard, lipophilic glycerin monostearate, bleached beeswax and white petrolatum were

melted on a water bath and stirred at 80°C to give a mixture. (3) Zinc oxide was weighed into a mortar. To this was added portionwise the mixture prepared in the above step (2) with uniform stirring. The resulting mixture was cooled to about 40°C with stirring. (4) Then, the mixture prepared in the above step (1) was added at about 40°C. The whole mixture was stirred well until solidification occurred to give the desired zinc oxide ointment. This was filled in tube B.

10 Example C-9 (Pump disinfectant)

Hinokitiol	0.05 g
Zinc chloride	0.04 g
99.5% ethanol	70.0 g
Purified water to make	100.0 g

15 The above ingredients were admixed and filled in bottle A.

Example C-10 (Pet animal shampoo)

Alaninate LN-30	40.0 g
Swanol AM-3130N	10.0 g
20 Hinokitiol	0.1 g
99.5% ethanol	3.0 g
Zinc chloride	0.08 g
pH control agent	q.s
Purified water to make	100.0 g

25 The above ingredients were admixed and filled

in bottle A.

Example C-11 (Ware detergent)

	Alanone ACE	15.0 g
	Swanol AM-3130N	5.0 g
5	Hinokitiol triethanolamine salt	0.01 g
	Hinokitiol L-arginine salt	0.03 g
	Zinc gluconate	0.001 g
	pH control agent	q.s.
	Purified water to make 100.0 g	

10 The above components were filled in bottle A.

Example C-12 (Liquid laundry detergent)

	Polyoxyethylene lauryl ether	35.0 g
	Triethanolamine alkylbenzenesulfonate	15.0 g
	Hinokitiol 2-amino-2-methyl-1,3-propanediol salt	
15		0.5 g
	Zinc chloride	0.4 g
	Purified water to make 100.0 g	

 The above components were filled in bottle A.

Example C-13 (Bathroom detergent)

20	Polyoxyethylene alkyl(C ₁₂) ether	10.0 g
	Citric acid	5.0 g
	Polypropylene glycol	5.0 g
	99.5% Ethanol	3.0 g
	Hinokitiol	0.05 g
25	Zinc acetate	0.05 g

pH control agent q.s.

Purified water to make 100.0 g

The above components were filled in bottle A.

Example C-14 (Toilet detergent)

5	Hydrochloric acid	9.5 g
	Sodium chloride	7.0 g
	Polyoxyethylene alkyl(C ₁₂) ether	2.0 g
	Thickener	2.5 g
	Hinokitiol	0.03 g
10	Zinc chloride	0.5 g
	pH control agent	q.s.
	Purified water to make 100.0 g	

The above components were filled in bottle A.

Example C-15 (Swab detergent, aerosol stock solution)

15	Liquid paraffin	0.3 g
	Sucrose fatty acid ester	2.0 g
	1,3-Butylene glycol	3.0 g
	Hinokitiol	0.02 g
	99.5% Ethanol	5.0 g
20	Zinc chloride	0.01 g
	Purified water to make 100.0 g	

The above components were filled in bottle A.

Example D-1 (Zinc oxide ointment)

	Hinokitiol	0.5 g
25	Lard	300.0 g

	Bleached beeswax	60.0 g
	Zinc oxide	100.0 g
	Copper(II) oxide	0.1 g
	White petrolatum	q.s.
5	Total	1000.0 g

(1) Hinokitiol and copper(II) oxide were weighed, then a portion of lard was added thereto, and the mixture was heated to about 40°C and stirred to give a homogeneous melt. (2) The remaining portion of lard, 10 bleached beeswax and white petrolatum were melted on a water bath and stirred to give a mixture at 80°C. (3) Zinc oxide was weighed into a mortar. Thereto was added portionwise the mixture prepared in the above-mentioned step (2) with stirring to give a homogenous mixture, 15 which was then cooled to about 40°C with stirring. (4) Then, the mixture prepared in the above step (1) was added at about 40°C and stirring was continued until solidification occurred to give the desired ointment. This ointment was filled in tube B.

20 Example D-2 (Ointment)

	Hinokitiol	0.1 g
	Olive oil	100.0 g
	Copper(II) oxide	100.0 g
	Simple ointment (Japanese Pharmacopoeia)	q.s.
25	Total	1000.0 g

(1) Hinokitiol was weighed. To this was added a portion of olive oil. The mixture was heated to about 40°C and stirred to give a homogeneous melt. (2) The remaining portion of olive oil and simple ointment (Japanese Pharmacopoeia) were dissolved on a water bath and then stirred at 80°C to give a mixture. (3) Copper(II) oxide was weighed into a mortar. Thereto was added portionwise with stirring the mixture prepared in the above step (2) to give a homogenous mixture, which was then cooled to about 40°C with stirring. (4) Then, the mixture prepared in the above step (1) was added at about 40°C, followed by stirring well until solidification occurred to give the desired ointment. This ointment was filled in tube B.

15 Example D-3 (Pump disinfectant)

Hinokitiol	0.05 g
Copper(I) chloride	0.04 g
99.5% Ethanol	70.0 g
Purified water to make 100.0 g	

20 The above components were filled in bottle A.

Example D-4 (Pet animal shampoo)

Alaninate LN-30	40.0 g
Swanol AM-3130N	10.0 g
Hinokitiol	0.1 g
25 99.5% Ethanol	3.0 g

Copper(I) chloride	0.08 g
pH control agent	q.s.
Purified water to make 100.0 g	

The above components were filled in bottle A.

5

Example E-1 (Oil)

	(W/W %)
Cetyl isooctanoate	35
Glyceryl trioctanoate	20
Natural vitamin E	0.05
10 Hinokitiol	0.03
Squalane	q.s.
Total	100.0

An oil composition of the above formula was filled in bottle A.

Example E-2 (Oil)

	(W/W %)
Cetyl isooctanoate	5
Glyceryl trioctanoate	20
5 Hinokitiol	0.03
Squalane	q.s
Total	100.0

An oil composition of the above formula was filled in bottle A.

10 Example F-1 (Lotion)

	(W/W %)
Concentrated glycerin	1.5
Polyoxyethylene sorbitan (20) monolaurate	1.0
Pantothenyl alcohol	0.5
15 Sodium hyaluronate	0.02
Hinokitiol	0.03
Ethanol	5.0
Purified water	q.s.
Total	100.0

20 A lotion of the above formula was filled in bottle A.

Example F-2 (Lotion)

	(W/W %)
Concentrated glycerin	5.0
25 Polyoxyethylene sorbitan (20) monolaurate	1.0

	Pantothenyl alcohol	0.5
	Hinokitiol	0.03
	Ethanol	1.0
	Purified water	q.s.
5	Total	100.0

A lotion of the above formula was filled in bottle A.

Test Example 1

The polyester-packed hinokitiol-containing
10 compositions obtained in the above examples were respectively stored at 40°C for 2 months and the percentage residue of hinokitiol in each composition was determined to evaluate the shelf-life of the composition.

Percentage residue (%) of hinokitiol = $A/A_0 \times 100$
15 where A = the amount of hinokitiol after 2 months at 40°C (mg/ml), A_0 = the amount of hinokitiol immediately after preparation (mg/ml)

The shelf-life of each composition was evaluated according to the following criteria.

- 20 o ... ≥90% residue
 Δ ... ≥80 - <90% residue
 x ... <80% residue

The results are set forth in Tables 1-4.

Table 1

		Example B-2
5	Alaninate LN-30	50.0
	Swanol AM-3130N	45.0
	Maltitol	0.3
	Polyethylene glycol 6000	0.5
	pH control agent	0.3
10	Ethanol	1.96
	Hinokitiol	0.04
	Purified water	q.s.
		
	Total	100
15	Bottle	A
	Evaluation	o

Table 2

		Example C-1	Example C-2
	Hinokitiol	0.05	0.01
25	Lard	20.0	0
	Bleached beeswax	6.0	0
	Zinc oxide	10.0	10.0
	Olive oil	0	10.0
	White petrolatum	q.s.	q.s.
30			
	Total	100	100
	Tube	B	B
35	Evaluation	o	o

Table 3

	Example E-1	Example E-2	Comparative Example (E-1)	
5				
	Cetyl isooctanoate	35	5	35
	Glyceryl trioctanoate	20	20	20
	Natural vitamin E	0.05	0	0.05
	Hinokitiol	0.03	0.03	0.03
10	Squalane	q.s.	q.s	q.s.
				
	Total	100	100	100
	Bottle	A	A	B
15	Evaluation	o	o	x

Table 4

		Example F-1	Example F-2	Compara- tive Example (F-1)	Compara- tive Example (F-1)
5	Concentrated glycerin	1.5	5.0	1.5	1.5
10	Polyoxyethylene sorbitan (20) monolaurate	1.0	1.0	1.0	1.0
	Pantothenyl alcohol	0.5	0.5	0.5	0.5
	Sodium hyaluronate	0.02	0	0.02	0.02
	Ethanol	5.0	1.0	5.0	5.0
	Hinokitiol	0.03	0.03	0.03	0.03
15	Purified water	q.s.	q.s.	q.s.	q.s.
					
					
	Total	100	100	100	100
20	Bottle	A	A	B	C
	Evaluation	o	o	x	x

Each of the comparative examples shown in
 25 Tables 2 and 3 represents the same composition as the
 corresponding example except that it was filled in the
 control bottle (bottle B or bottle C).

Test Example 2

Hinokitiol-containing detergent compositions
 30 were prepared according to the formulas given below in
 Table 5 and filled in bottles A through C. The filled
 bottles were stored at 40°C for 2 months and the
 percentage residues of hinokitiol in the respective

compositions were determined as in Test Example 1. The shelf-life of each composition was also evaluated in the same manner as Example 1.

The results are shown in Table 5.

	Table 5			
	Example			Comparative Example 1
	1	2	3	
N-Lauroyl-N-methyl- β -alanine sodium solution	15.0	15.0	15.0	15.0
Lauryl dimethylaminoacetic acid betaine solution	10.0	10.0	10.0	10.0
Glycerin	-	5.0	5.0	-
Propylene glycol	3.0	-	-	3.0
Citric acid	0.1	-	-	0.1
Phosphoric acid	-	0.1	0.1	-
Tocopherol acetate	-	-	-	-
Hinokitiol	0.05	0.01	0.1	0.05
Ethanol	-	-	-	-
p-Hydroxybenzoic acid	0.1	0.1	-	0.1
Purified water	q.s.	q.s.	q.s.	q.s.
Total	100	100	100	100
Bottle	A	A	A	B
Evaluation	o	o	o	x

It is apparent from Table 5 that whereas the composition stored in the conventional container (bottle B) showed adsorption and absorption of hinokitiol and,

hence, a decrease in percentage residue, the compositions stored in the light-opaque polyester container (bottle A) showed high residues as the adsorption of hinokitiol was inhibited.

- 5 Decreases in residues were also observed when the polypropylene container (bottle C) was used.

Test Example 2

	(W/W %)
N-Cocoylmethyltaurine sodium solution	10.0
10 Polyoxyethylene (3) alkyl ether sulfate sodium salt	40.0
Lauryl dimethylaminoacetic acid betaine aq. solution	10.0
Cocofatty acid diethanol amide	0.5
15 Ethylene glycol distearate	2.0
Methyl p-hydroxybenzoate	0.1
Glycerin	2.0
Citric acid	0.1
Hinokitiol	0.01
20 Purified water	q.s.
Total	100.0

- A detergent composition of the above formula was filled in the bottle A described in Test Example 1 to
25 provide a polyester-packed hinokitiol-containing

composition of the present invention.

This composition showed a high residue of its water-insoluble fraction even after prolonged storage.

Test Example 3

5		(W/W %)
	N-Lauroyl-N-methyl- β -alanine sodium solution	15.0
	Polyoxyethylene (3) alkyl ether sulfate sodium salt	40.0
	Lauryl dimethylaminoacetic acid betaine aq. solution	10.0
10		
	Lauric acid diethanol amide	2.0
	Ethylene glycol distearate	2.0
	Sodium lactate	2.0
	Methyl p-hydroxybenzoate	0.1
15	Hydrolyzed collagen peptide	1.0
	Citric acid	0.1
	Hinokitiol	0.1
	Purified water	q.s.
20	Total	100.0

A detergent composition of the above formula was filled in the bottle A described in Test Example 1 to provide a polyester-packed hinokitiol-containing composition of the present invention.

25 This composition showed a high residue of its

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water-insoluble fraction even after prolonged storage.

CLAIMS

1. A polyester-packed hinokitiol-containing composition comprising a composition containing hinokitiol or a salt thereof as filled in a light-opaque polyester container.

2. The polyester-packed hinokitiol-containing composition according to claim 1 which is a liquid, gel, ointment, cream or oil containing hinokitiol or a salt thereof as filled in a light-opaque polyester container.

3. The polyester-packed hinokitiol-containing composition according to claim 1 or 2 which is a cosmetic composition containing hinokitiol or a salt thereof as filled in a light-opaque polyester container.

4. The polyester-packed hinokitiol-containing composition according to claim 1 or 2 which is an external or topical preparation containing hinokitiol or a salt thereof as filled in a light-opaque polyester container.

5. A polyester-packed hinokitiol-containing composition which is a liquid composition containing hinokitiol or a salt thereof as filled in a light-opaque polyester container.

6. The polyester-packed hinokitiol-containing composition according to claim 5 which contains 0-10 w/w % of a lower alcohol together with hinokitiol or a salt



thereof.

7. A polyester-packed hinokitiol-containing composition which is a ointment, gel, cream or oil containing hinokitiol or a salt thereof as filled in a
5 light-opaque polyester container.

8. A polyester-packed hinokitiol-containing detergent composition containing hinokitiol or a salt thereof as filled in a light-opaque polyester container.

9. The polyester-packed hinokitiol-containing
10 composition according to claim 1 which is a liquid, gel, ointment, cream or oil containing a hydrocarbon and a fatty acid ester together with hinokitiol or a salt thereof as filled in a light-opaque polyester container.

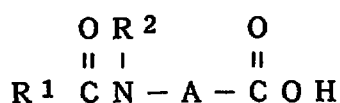
10. The polyester-packed hinokitiol-containing
15 composition according to claim 1 which is a liquid, gel, ointment, cream or oil containing one or more members selected from the group consisting of polyhydric alcohol, sugar, sugar alcohol and polyhydric alcohol alkyl ether, ethanol and pantothenyl alcohol together with hinokitiol
20 or a salt thereof as filled in a light-opaque polyester container.

11. The polyester-packed hinokitiol-containing composition according to claim 8 which is a detergent composition containing maltitol and a polyethylene glycol
25 having an average molecular weight of 4000-15000 together

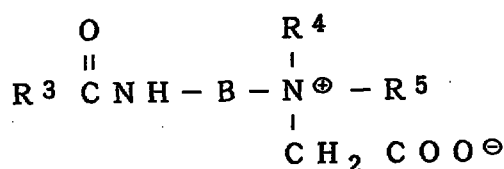


with hinokitiol or a salt thereof as filled in a light-opaque polyethylene container.

12. A polyester-packed hinokitiol-containing composition according to claim 8 which is a detergent
5 composition comprising an anionic surfactant of general formula (1)



[wherein R^1 represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R^2 represents a lower alkyl radical; A represents a lower
10 alkylene radical] or a salt thereof and an amphoteric surfactant of general formula (2)

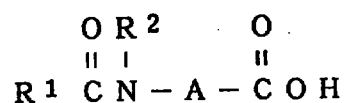


[wherein R^3 represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R^4 and R^5 each represents a lower alkyl radical; B represents a
15 lower alkylene radical] together with hinokitiol or a salt thereof as filled in a light-opaque polyester container.

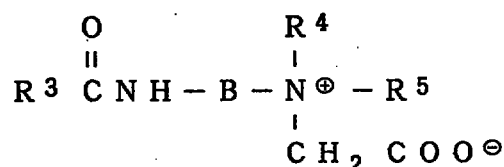
13. The polyester-packed hinokitiol-containing composition according to claim 12 which is a detergent
20 composition comprising an anionic surfactant of general



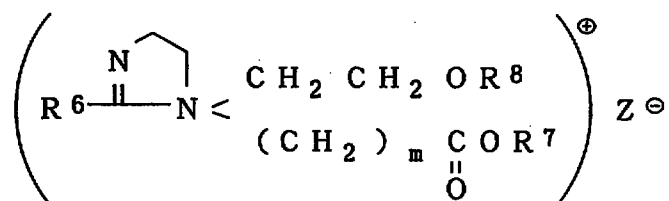
formula (1)



[wherein R^1 represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R^2 represents a lower alkyl radical; A represents a lower alkylene radical] or a salt thereof, an amphoteric surfactant of general formula (2)



[wherein R^3 represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R^4 and R^5 each represents a lower alkyl radical; B represents a lower alkylene radical], and an amphoteric surfactant of general formula (3)

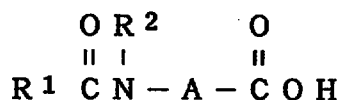


[wherein R^6 represents a saturated or unsaturated hydrocarbon radical of 1 to 40 carbon atoms; R^8 represents a hydrogen atom or CH_2COOR^9 ; R^7 and R^9 each represents an alkali metal, an alkaline earth metal,

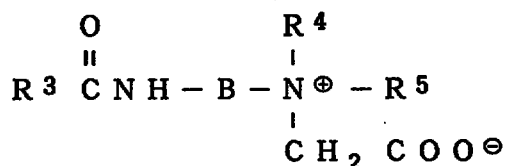


copper or zinc; m is equal to 1 or 2; Z represents OH, $C_{12}H_{25}OSO_3$, or $C_{11}H_{23}CON(CH_3)CH_2COO$] together with hinokitiol or a salt thereof as filled in a light-opaque polyester container.

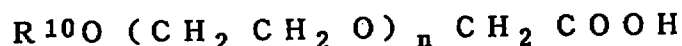
- 5 14. The polyester-packed hinokitiol-containing composition according to claim 12 which is a detergent composition comprising an anionic surfactant of general formula (1)



- [wherein R^1 represents a saturated or unsaturated
10 hydrocarbon radical of 1 to 40 carbon atoms; R^2 represents a lower alkyl radical; A represents a lower alkylene radical] or a salt thereof, an amphoteric surfactant of general formula (2)



- [wherein R^3 represents a saturated or unsaturated
15 hydrocarbon radical of 1 to 40 carbon atoms; R^4 and R^5 each represents a lower alkyl radical; B represents a lower alkylene radical], and an anionic surfactant of general formula (4)



- [wherein R^{10} represents a saturated or unsaturated





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hydrocarbon radical of 1 to 40 carbon atoms; n is a whole number satisfying the relation $1 \leq n \leq 10$ or a salt thereof together with hinokitiol or a salt thereof as filled in a light-opaque polyester container.

5 15. The polyester-packed hinokitiol-containing composition according to claim 1 which is a liquid, gel, ointment, cream or oil containing at least one species of zinc compound together with hinokitiol or a salt thereof as filled in a light-opaque polyester container.

10 16. The polyester-packed hinokitiol-containing composition according to claim 1 which is a liquid, gel, ointment, cream or oil containing at least one species of copper compound together with hinokitiol or a salt thereof as filled in a light-opaque polyester container.

15 17. A hinokitiol-containing composition which is an oil containing a hydrocarbon and a fatty acid ester together with hinokitiol or a salt thereof.

 18. A hinokitiol-containing composition which is a lotion containing one or more members selected from
20 the group consisting of polyhydric alcohol, sugar, sugar alcohol and polyhydric alcohol alkyl ether, ethanol and pantothenyl alcohol together with hinokitiol or a salt thereof.

 19. A hinokitiol-containing composition which
25 is a detergent composition containing maltitol and a



THIS SHEET HAS BEEN
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polyethylene glycol having an average molecular weight of
4000-15000 together with hinokitiol or a salt thereof.

This Sheet Has Been Replaced



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