

1

3,751,562

MEDICATED GELLED OILS

Joseph Nichols, Princeton, N.J., assignor to Princeton Biomedix Incorporated, Princeton, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 28,124, Apr. 13, 1970. This application Sept. 22, 1972, Ser. No. 291,239

Int. Cl. A61k 9/06, 27/00

U.S. Cl. 424—45

11 Claims

ABSTRACT OF THE DISCLOSURE

Medicated gelled oils suitable for topical application are disclosed. The gelled oils which form an ointment base are mineral oils gelled with at least one polyoxyethylated fatty acid alcohol ether. The base can be compounded with any conventional topical medicament for use as a germicide, fungicide, or anesthetic.

This application is a continuation-in-part of co-pending application Ser. No. 28,124, filed Apr. 13, 1970, and now abandoned.

This invention relates to topical medicaments and more particularly, this invention relates to medicated water-soluble gelled oils.

Over the years there has been an established need for an effective antiseptic for topical application to the skin, either to disinfect a wound or for a pre-surgical application. Of the many types of antiseptics devised and used, the most effective and best all around antiseptic has been, and still is, iodine. The antibacterial spectrum of iodine is wide and it is potent against viruses and spores of fungi and bacteria as well. Many of the problems resulting from its application in alcohol solution—stinging, staining of skin and clothing, odor, burning of tissue, sensitization—have in recent years been partly or completely overcome by water solubilization with complexing agents such as polyvinylpyrrolidone and polyoxyethylene surfactants. These new iodine formulations, however, still being liquid, continue to present a problem of running on the skin and, in the case of their use as pre-surgical scrubs, with pooling and resultant danger of irritation and burns. In this respect, tincture of iodine was superior to the present iodophor products in that the alcohol evaporated relatively rapidly leaving the iodine more or less at the specific site desired.

In order to eliminate as many as possible of the above-mentioned disadvantages of known iodine preparations, many hospitals have adopted other types of compounds for pre-surgical antiseptic use such as merbromin and thimerosal. The most common composition used for this purpose is a hexachlorophene liquid soap such as that sold under the trade mark "pHisoHex" which is a solution of hexachlorophene and a potassium soap. Normally, the area to be treated with the hexachlorophene soap must be scrubbed with the same prior to any surgical procedure. This material is also used as a scrub for the hands and other areas wherein the long-term effectiveness is needed.

Disadvantages associated with such commonly used materials as liquid hexachlorophene preparations are the general messiness of their application and certain harmful physiological effects hexachlorophene has been found to possess. It is also well known that while hexachlorophene does not have certain of the disadvantages of iodine, it is, by the same token, not as effective as iodine as a germicide.

It has now been found that the disadvantages associated with the antiseptic preparations of the prior art can be eliminated by compounding suitable antiseptic agents, for example, iodine haloacetamide, chlorhexidine, merbromin (Mercurochrome), thimerosal (Merthiolate) and hexa-

2

chlorophene, with a gelled oil. The base for these compositions is preferably a mineral oil gelled by at least one polyoxyethylated fatty acid alcohol ether.

Accordingly, it is a primary object of the present invention to provide a topical medicament which is free of the aforementioned and other such disadvantages.

It is another primary object of the present invention to provide a carrier for a topical medicament which is clear, water-soluble, aesthetically pleasing, and non-irritating.

It is another object of the present invention to provide a topical antiseptic composition which is relatively inexpensive to manufacture and easy to apply.

It is still another object of the present invention to provide an antiseptic composition containing iodine, which composition is non-irritating, easy to apply, and has a long-lasting effect.

Yet another object of the present invention is to provide an antiseptic composition containing thimerosal, which composition is non-irritating, easy to apply, and has a long-lasting effect.

Certain characteristics of the aforementioned inventive gelled oil composition also make such a composition extremely useful as a carrier for medication used as an anti-acne aid. Such medications are, for example, sulfur and resorcinol.

Consistent with the foregoing objects, it is yet another object of the present invention to provide an anti-acne composition which is simple and easy to use, non-irritating to the skin, and does not leave an unsightly residue.

Additionally, for certain specific purposes, other ingredients such as vitamins A, C, and E may be included in the gelled oil base.

According to the present invention, a carrier is provided for the topical medication, which carrier is a water-soluble gelled oil comprising a mineral oil and at least one polyoxyethylated fatty acid alcohol ether. The polyoxyethylated fatty acid alcohol ether can be a saturated or unsaturated compound and preferably, has from about 16 to about 22 carbon atoms in the fatty acid moiety. In particular, the more preferred such polyoxyethylated fatty acid alcohol ethers are polyoxyethylene (7) oleyl ether and polyoxyethylene (10) oleyl ether. Still more preferred, is a combination of polyoxyethylene (7) oleyl ether and polyoxyethylene (15) stearyl ether. Generally, the polyoxyethylated fatty acid alcohol ether is present in an amount from about 18 to about 25% by weight of the total composition, which composition includes the mineral oil, a suitable topical medicament in an effective amount, and a suitable diluent. Preferably, the polyoxyethylated fatty acid alcohol ether is present in an amount from about 19 to about 21% by weight of the total composition. The mineral oil is present in an amount of from about 18 to about 30% by weight of the total composition and, preferably, in the range of from about 20 to 25% by weight of the total composition.

The gel system has been found to have excellent surface active, spreading, and penetrating characteristics. It has both hydrophilic and lipophilic properties which enhance percutaneous absorption. It improves contact of the antiseptic with the tissue. The carrier therefore contributes to effectiveness of the antiseptic contained therein.

Suitable medicaments for topical use as disinfectants or germicides, fungicides, and local anesthetics are as follows:

nitrofurazone
furazolidone
nifuroxime
bacitracin
chloamphenicol
chlortetracycline

dimethylchlortetracycline
 gramicidin
 nystatin
 oleandomycin
 oxytetracycline
 polymyxin
 tetracycline
 tyrothricin
 merbromin
 furaltadone
 nitrofurantoin
 chlordantoin
 benzalkonium chloride
 butethamine hydrochloride
 butyl aminobenzoate
 dibucaine hydrochloride
 ethylaminobenzoate
 lidocain
 pramoxine hydrochloride
 tetracaine
 amolanone hydrochloride
 diperodon hydrochloride
 orthocaine
 benzethonium chloride
 hexylresorcinol
 hexachlorophene
 iodine
 sulfur
 resorcinol
 chlorhexidine
 iodoacetamide
 bromoacetamide
 chloroacetamide
 thimerosal

The most preferred of these disinfectant materials are iodine, chlorhexidine, iodoacetamide, thimerosal, and, for certain applications, hexachlorophene is also preferred. In many instances, a combination of iodine and hexachlorophene is desirable. Generally, the iodine should be present in an amount of from about 0.5 to about 2% by weight of the total composition, and preferably, about 1% by weight of the total composition. When hexachlorophene is used, it should be present in an amount from about 0.5 to about 3% by weight of the total composition, and preferably 1% by weight of the total composition.

Most of the acne preparations on the market contain sulfur in dispersed form in concentrations of 1 to 5%. In using the preparation of the instant invention, up to 1% of sulfur can be dissolved in the system to obtain a true solution. It is believed that the medicament is more efficacious in this situation.

A preferred local anesthetic is pramoxine hydrochloride which can be used in concentrations of up to about 2%.

The pH of a composition according to the instant invention containing a gelled mineral oil with a polyoxyethylated fatty acid alcohol ether and iodine, using a deionized water diluent, is about 3 to 4. If a composition is needed which is more nearly neutral, an aqueous phosphate buffer solution can be substituted for the water, thereby achieving a final pH of about 6.0. Additionally, for certain specialized purposes, the use of isotonic sodium chloride solution is also possible. Such an isotonic saline solution contains from 0.85% to 0.95% of sodium chloride in purified water.

The utility of the compositions of the instant invention is immediately apparent. These compositions can be used as a hand scrub or a pre-surgical scrub by physicians, dentists, food handlers or the like. The compositions can also be used as a household first-aid antiseptic, an antiseptic for rectal use or an underarm deodorant.

The compositions according to the present invention have been tested for stability at room temperature and at 37° C. Tests have been carried out for periods of over six months with no instability noted.

This invention is further illustrated by the following examples which are merely illustrative and are not meant to be in any way limiting.

EXAMPLE 1

Polyoxyethylene (7) oleyl ether was prepared by the following procedure:

Oleyl alcohol (381 grams) was dehydrated by heating to 150° C. under vacuum for thirty minutes while bubbling in a stream of dry nitrogen. The temperature was raised to 185°, two pellets of sodium hydroxide were added and ethylene oxide gas, which had been scrubbed with soda lime and dry sodium hydroxide, was passed into the mixture. The temperature of the reaction mixture was maintained at 185–190° C. After 27 hours, 440 grams ethylene oxide has been taken up. The reaction mixture was cooled to 150° and was degassed under vacuum with a stream of nitrogen for 40 minutes. The product obtained was a light amber colored oil which partially solidified on cooling.

EXAMPLE 2

Polyoxyethylene (15) stearyl ether was prepared by a similar procedure:

Stearyl alcohol (270.5 grams) was dried by heating to 150° C. under vacuum while bubbling in a stream of dry nitrogen for 30 minutes. A pellet of sodium hydroxide was added and the material was heated to 185° C. The reaction mixture was kept at 185°–190° C. while a vigorous stream of ethylene oxide gas, scrubbed with soda lime and sodium hydroxide was added. After 23 hours, 660 grams of ethylene oxide has been taken up by the mixture. The product was degassed by bubbling a stream of dry nitrogen gas through the material at 150° C. under vacuum for 30 minutes. The product was a light yellow oil which solidified on cooling.

EXAMPLE 3

A topical antiseptic was prepared according to this invention having the following composition:

Ingredients:	Percent
Mineral oil -----	23.59
Polyoxyethylene (15) stearyl ether -----	11.00
Polyoxyethylene (7) oleyl ether -----	9.43
Iodine -----	0.94
Deionized water -----	55.03

The composition was prepared as follows:

Mineral oil (45 grams), polyoxyethylene (15) stearyl ether (21 grams), and polyoxyethylene (7) oleyl ether (18 grams) were mixed and heated to 95° C. Iodine (1.8 grams) was added and the mixture was stirred at 95° C. until the iodine crystals were completely dissolved. Deionized water (105 grams), which had been heated to 95° C., was then rapidly added to the mineral oil solution with vigorous stirring. While still hot the mixture was poured into suitable containers.

EXAMPLE 4

A topical antiseptic was prepared according to this invention having the following composition:

Ingredients:	Percent
Mineral oil -----	23.59
Polyoxyethylene (15) stearyl ether -----	11.00
Polyoxyethylene (7) oleyl ether -----	9.43
Iodine -----	0.94
Aqueous phosphate buffer—pH 7.2 -----	55.03

The composition was prepared as follows:

Mineral oil (15 grams), polyoxyethylene (15) stearyl ether (7 grams), polyoxyethylene (7) oleyl ether (6 grams) were mixed and heated to 95° C. Iodine (0.6 grams) was added and the mixture stirred at 95° C. until the crystals were completely dissolved. Aqueous phosphate buffer (35 grams), which had been heated to 95° C., was then rapidly added to the mineral oil solution with

5

vigorous stirring. While still hot the mixture was poured into suitable containers. The pH of the final gel was 6.0.

EXAMPLE 5

To topical antiseptic was prepared according to this invention having the following composition:

Ingredients:	Percent
Mineral oil -----	28.6
Polyoxyethylene (7) oleyl ether -----	22.8
Iodine -----	.95
Deionized water -----	47.7

The composition was prepared as follows:

Mineral oil (30 grams), polyoxyethylene (7) oleyl ether (24 grams) were mixed and heated to 95° C. Powdered iodine (1.1 grams) was added and the mixture stirred at 90° C. until solution was complete. Deionized water (50 ml.), which had been heated to 95° C., was then rapidly added to the mineral oil solution with vigorous stirring. While still hot, the mixture was poured into suitable containers.

EXAMPLE 6

A topical antiseptic was prepared according to this invention having the following composition:

Ingredients:	Percent
Mineral oil -----	23.00
Polyoxyethylene (10) oleyl ether -----	21.6
Iodine -----	1.1
Deionized water -----	54.4

The composition was prepared as follows:

Mineral oil (30 grams), polyoxyethylene (10) oleyl ether (28 grams) were mixed and heated to 90° C. Powdered iodine (1.3 grams) was added and the mixture stirred until solution was complete. Deionized water (70 ml.), which had been heated to 95° C., was then rapidly added to the mineral oil solution with vigorous stirring. While still hot, the mixture was poured into suitable containers.

EXAMPLE 7

A topical antiseptic was prepared according to this invention having the following composition:

Ingredients:	Percent
Mineral oil -----	23.36
Polyoxyethylene (15) stearyl ether -----	10.90
Polyoxyethylene (7) oleyl ether -----	9.35
Iodine -----	0.94
Pramoxine Hydrochloride -----	0.94
Deionized water -----	54.52

The composition was prepared as follows:

Mineral oil (15 grams), polyoxyethylene (15) stearyl alcohol (7 grams), and polyoxyethylene (7) oleyl alcohol (6 grams) were mixed and heated to 95° C. Iodine (0.6 grams) was added and the mixture was stirred at 95° C. until the crystals were completely dissolved. Deionized water (35 grams), containing the Pramoxine Hydrochloride (0.6 grams) which had been heated to 95° C., was rapidly added to the mineral oil solution with vigorous stirring. While still hot the mixture was poured into suitable containers.

EXAMPLE 8

A topical antiseptic was prepared according to this invention having the following composition:

Ingredients:	Percent
Mineral oil -----	23.36
Polyoxyethylene (15) stearyl ether -----	10.90
Polyoxyethylene (7) oleyl ether -----	9.35
Iodine -----	0.94
Hexachlorophene -----	0.94
Deionized water -----	54.52

The composition was prepared as follows:

A mixture of mineral oil (15 grams), polyoxyethylene

6

(15) stearyl ether (7 grams) and polyoxyethylene (7) oleyl ether (6 grams) was heated to 95° C. Iodine (0.6 grams), and hexachlorophene (0.6 grams) were added and the mixture was stirred until the materials were completely dissolved. Deionized water (35 grams), heated to 95° C., was then rapidly added to the mineral oil solution with vigorous stirring. While still hot the mixture was poured into suitable containers.

EXAMPLE 9

A topical antiseptic was prepared according to this invention having the following composition:

Ingredients:	Percent
Mineral oil -----	19.26
Polyoxyethylene (7) oleyl ether -----	8.99
Polyoxyethylene (15) stearyl ether -----	6.42
Iodine -----	1.16
Deionized water -----	64.18

The composition was prepared as follows:

Mineral oil (15 grams), polyoxyethylene (7) oleyl ether (7 grams), polyoxyethylene (15) stearyl ether (5 grams), were mixed and heated to 90° C. Powdered iodine (0.9 grams) was added and the mixture stirred until solution was complete. Deionized water (50 ml.), which had been heated to 95° C., was then rapidly added to the mineral oil solution with vigorous stirring. This composition was pourable at room temperature. On 5-fold dilution of this lotion with water no phase separation was observed.

EXAMPLE 10

Ingredients:	Percent
Mineral oil -----	23.96
Polyoxyethylene (7) oleyl ether -----	11.18
Polyoxyethylene (15) stearyl ether -----	7.99
Iodoacetamide -----	.96
Deionized water -----	55.91

Mineral oil (15 grams), polyoxyethylene (7) oleyl ether (7 grams), polyoxyethylene (15) stearyl ether (5 grams) were mixed and heated to 95° C. Deionized water (35 ml.), in which iodoacetamide (0.62 grams) was dissolved was heated to 95° C., and then rapidly added to the mineral oil solution with vigorous stirring. While still hot, the mixture was poured into suitable containers. The gel was colorless and water clear.

EXAMPLE 11

An anti-acne compound was prepared according to this invention having the following composition:

Ingredients:	Percent
Mineral oil -----	23.26
Polyoxyethylene (15) stearyl ether -----	10.85
Polyoxyethylene (7) oleyl ether -----	9.30
Hexachlorophene -----	0.93
Resorcinol -----	0.93
Precipitated sulfur -----	0.47
Deionized water -----	54.26

The composition was prepared as follows:

Mineral oil (15 grams), polyoxyethylene (15) stearyl ether (7 grams), and polyoxyethylene (7) oleyl ether (6 grams) were mixed and heated to 95° C. Sulfur (0.3 gram) was added and the mixture was heated to 130° C. with stirring until the melted sulfur had completely dissolved. It was then cooled to 95° C. and hexachlorophene (0.6 gram) and resorcinol (0.6 gram) were added, with stirring. Deionized water (35 grams), heated to 95° C., was rapidly added with vigorous stirring. While still hot, the mixture was poured into suitable containers.

EXAMPLE 12

A topical antiseptic (2% active ingredient) was prepared according to this invention having the following composition:

Ingredients:	Percent
Mineral oil -----	23.70
Polyoxyethylene (7) oleyl ether -----	11.06
Polyoxyethylene (15) stearyl ether -----	7.90
Iodoacetamide -----	2.05
Deionized water -----	55.29

The composition was prepared as follows:

Mineral oil (15 grams), polyoxyethylene (7) oleyl ether (7 grams), polyoxyethylene (15) stearyl ether (5 grams) were mixed and heated to 95° C. Deionized water (35 ml.), in which iodoacetamide (1.3 grams) was dissolved, was heated to 95° C. and then rapidly added to the mineral oil solution with vigorous stirring. While still hot, the mixture was poured into suitable containers. The gel was colorless and water clear.

EXAMPLE 13

A topical antiseptic was prepared according to this invention having the following composition:

Ingredients:	Percent
Mineral oil -----	23.36
Polyoxyethylene (15) stearyl ether -----	10.90
Polyoxyethylene (7) oleyl ether -----	9.35
Hexachlorophene -----	0.94
Deionized water -----	55.45

The composition was prepared as follows:

A mixture of mineral oil (15 grams), polyoxyethylene (15) stearyl ether (7 grams), and polyoxyethylene (7) oleyl ether (6 grams) was heated to 95° C. Hexachlorophene (0.6 gram) was added and the mixture stirred until complete solution had occurred. Deionized water (35 grams), heated to 95° C., was rapidly added with vigorous stirring. While still hot, the mixture was poured into suitable containers.

EXAMPLE 14

A topical antiseptic was prepared according to this invention having the following composition:

Ingredients:	Percent
Mineral oil -----	23.96
Polyoxyethylene (7) oleyl ether -----	11.18
Polyoxyethylene (15) stearyl ether -----	7.99
Bromoacetamide -----	.96
Deionized water -----	55.91

The composition was prepared as follows:

Mineral oil (15 grams), polyoxyethylene (7) oleyl ether (7 grams), polyoxyethylene (15) stearyl ether (5 grams) were mixed and heated to 95° C. Deionized water (35 ml.) in which bromoacetamide (0.62 gram), was dissolved, was heated to 95° C., and then rapidly added to the mineral oil solution with vigorous stirring. While still hot, the mixture was poured into suitable containers. The gel was colorless and water clear.

EXAMPLE 15

The composition of Example 11 was applied daily to the face of a teenage girl, age 14, having a problem with acne, for four weeks. The product of Example 11 was applied to the faces of two children, ages 10 and 12, for three weeks. In each instance, the face was wetted and the gel was rubbed on for approximately one minute before being washed off with water. There were no untoward reactions and a good cleansing and cosmetic effect was observed.

EXAMPLE 16

Skin test studies on rabbits were performed under standard test conditions. Samples of the compositions prepared by Examples 3, 4, 5 and 6, as well as a sample of the gelled oil without any active ingredient were applied to the skin of six New Zealand rabbits. "Isodine" (polyvinylpyrrolidone-iodine antiseptic) was used as a control. The test samples were applied on one side of the shaven rabbit to an area of skin approximately 15 cm.². Isodine was applied to a similar area on the opposite side. At five and then day inspection no skin irritation was observed.

Skin tests were repeated on two additional rabbits with daily application and observation for six days of the test samples and the isodine control. No irritation or skin reaction was observed at any time.

EXAMPLE 17

Skin degerming studies were also performed according to the following procedure:

An area of skin approximately 6 cm. in diameter on the inner aspect of lower forearm of seven subjects was selected and marked. The background number of microorganisms was determined by contacting this area with Rodac plates containing standard nutrient agar (sterile). The areas were painted with iodine gel (right arm) and Isodine (left arm) and the materials were left in contact with the skin for one minute. They were then removed by washing with a water saturated towel and the area was contacted again with fresh Rodac plates. The plating was repeated after one and two hours. The plates were stored at 37° C. for 48 hours at which time the microorganisms were unenumerated. The results of this study are shown on the following table.

Subject	Before application		Number of organisms					
			0 hour		1 hour		2 hours	
	Right	Left	Right	Left	Right	Left	Right	Left
PM-----	240	225	20	105	14	26	33	36
ER-----	59	78	2	2	13	19	42	34
AB-----	41	37	0	0	1	0	1	2
ED-----	2	6	1	2	5	1	2	1
JB-----	123	154	1	3	11	12	14	20
DB-----	101	92	0	0	2	7	21	42

EXAMPLE 18

A topical antiseptic was prepared according to the invention having the following composition:

Ingredients:	Percent
Mineral oil -----	23.96
Polyoxyethylene (7) oleyl ether -----	11.18
Polyoxyethylene (15) stearyl ether -----	7.99
Chlortetracycline hydrochloride -----	.96
Deionized water -----	55.91

The composition was prepared as follows:

Mineral oil (15 grams), polyoxyethylene (7) oleyl ether (7 grams), polyoxyethylene (15) stearyl ether (5 grams) were mixed and heated to 95° C. A solution of chlortetracycline hydrochloride (0.62 grams) in deionized water (35 ml.) was heated to 95° C. and then rapidly added to the mineral oil solution with vigorous stirring. While still hot the mixture was poured into suitable containers. A clear yellow, ringing gel was obtained.

9

EXAMPLE 19

A topical antiseptic was prepared according to this invention having the following composition:

Ingredients:	Percent
Mineral oil -----	23.96
Polyoxyethylene (7) oleyl ether -----	19.17
Chlorhexidine acetate -----	.96
Deionized water -----	55.91

The composition was prepared as follows:

Mineral oil ((15 grams), polyoxyethylene (7) oleyl ether (12 grams) were mixed and heated to 90° C. A solution of chlorhexidine acetate (0.63 gram) in deionized water (35 ml.) was heated to 90° C. and then rapidly added to the mineral oil solution with vigorous stirring. While still hot, the mixture was poured into suitable containers.

EXAMPLE 20

A topical antiseptic was prepared according to this invention having the following composition:

Ingredients:	Percent
Mineral oil -----	22.52
Polyoxyethylene (7) oleyl ether -----	19.52
Chlorhexidine gluconate -----	.90
Deionized water -----	57.06

The composition was prepared as follows:

Mineral oil (15 grams), polyoxyethylene (7) oleyl ether (13 grams) were mixed and heated to 90° C. A solution prepared by adding 3 ml. of 20% w./v. chlorhexidine gluconate to 35 ml. water, was heated to 90° C. and then rapidly added to the mineral oil solution with vigorous stirring. While still hot, the mixture was poured into suitable containers.

EXAMPLE 21

The effect of the subject compositions was determined by the following experimental method. A composition comprising

Nonylphenoxypolyethyleneoxy (4) ethanol -----	Iodine complex, 5.5% w./v.	
Nonylphenoxypolyethyleneoxy (15) ethanol -----		
Nonylphenoxypolyethyleneoxy (30) ethanol -----		
	Approx. 10% w./v. (surfactant).	

1% available iodine.

The above noted composition was tested in comparison with the composition of Example 3 by the serum-agar cup-plate method (Methods of Testing Antibiotic Ointments, Disinfections, Sterilization and Preservation, page 181-2, Lea and Febiger, 1968), according to the following technique:

METHOD

Base layer —10 ml. nutrient agar/plate

Seed layer—10 ml. nutrient agar containing 10% sterile horse serum and 0.05% inoculum

Reference standard—IOPREP (Arbrook) solution

Procedure—Plate in triplicate, incubate at 37° C. for 24 hours, confirm results with Resazurin reaction, express as means.

As may be seen from the following table the composition of the instant invention provides 30 to 100% more iodine activity than previously employed commercial iodine preparations.

Zone of inhibition, mm.	Composition of—	
	Ex. 21	Ex. 3
<i>Staph. aureus</i> -----	6.8	13.8
<i>E. coli</i> -----	5.3	11.9
<i>Ps. aeruginosa</i> -----	1.7	3.4

10

EXAMPLE 22

An aerosol formulation according to the instant invention was prepared as follows:

Ingredients	Weight (grams)	Percent
Mineral oil (J & J blend) -----	150	23.96
P.E.O. stearyl alcohol -----	50	7.99
P.E.O. oleyl alcohol -----	70	11.18
Iodine -----	6	0.99
Water -----	350	55.91
Total -----	626	100.00

The composition was prepared by mixing the mineral oil, P.E.O. stearyl alcohol, and P.E.O. oleyl alcohol were mixed and heated to 100° C. with constant mixing. The iodine was added and vigorously mixed until it was completely solubilized. The water was heated to 95° C. and rapidly added to the oil mixture with vigorous agitation, and the perfume was added. The hot mixture was poured into Sepro cans, the valves added and crimped in place and the cans charged with 10 ml. of Freon propellant 12:114 (90:10).

It is of course, apparent that one may use any of the conventional propellants such as isobutane, the other Freons, and nitrogen in connection with the above-noted aerosol composition in amounts suitable so as to propel same from an aerosol container.

EXAMPLE 23

A topical antiseptic was prepared according to this invention having the following composition:

Ingredients:	Percent
Mineral oil -----	24.16
Polyoxyethylene (7) oleyl ether -----	11.27
Polyoxyethylene (15) stearyl ether -----	8.06
Merthiolate -----	0.097
Red dye (D & C #22) -----	0.016
Demineralized water -----	56.39

The composition was prepared as follows:

Mineral oil (120 grams), polyoxyethylene (7) oleyl ether (56 grams), polyoxyethylene (15) stearyl ether (40 grams) were mixed and heated in an open beaker to 95° C. Merthiolate (0.48 gram) and the red dye (0.08 gram) were dissolved in 280 grams of demineralized water, heated to 92° C., and poured with stirring into the oil phase. After a few minutes of vigorous stirring, the hot gel was poured into containers and allowed to set.

The gel was clear.

EXAMPLE 24

A topical antiseptic was prepared according to the present invention having the following composition:

Ingredients:	Percent
Mineral oil -----	24.17
Polyoxyethylene (7) oleyl ether -----	11.28
Polyoxyethylene (15) stearyl ether -----	8.06
Merthiolate -----	0.097
Red Dye (D & C #22) -----	0.016
Demineralized water -----	56.38

The composition was prepared as follows:

Mineral oil (15 grams), polyoxyethylene (7) oleyl ether (7 grams), polyoxyethylene (15) stearyl ether (5 grams), and merthiolate (0.06 gram) were heated with stirring in an open vessel to 90° C., at which point there was added a solution of 0.01 gram red dye in 35 grams of demineralized water preheated to 95° C. Stirring was continued for a few minutes and then the mixture was allowed to cool and set to a ringing gel.

EXAMPLES 25-54

Topical antiseptics were prepared according to the method of Example 3, substituting the following medicaments for iodine, all in the same proportion:

Example:	Medicament
25 -----	Nitrofurazone.
26 -----	Furazolidone.
27 -----	Nifuroxime.
28 -----	Bacitracin.
29 -----	Chloramphenicol.
30 -----	Chlortetracycline.
31 -----	Dimethylchlortetracycline.
32 -----	Gramicidin.
33 -----	Nystatin.
34 -----	Oleandomycin.
35 -----	Oxytetracycline.
36 -----	Polymyxin.
37 -----	Tetracycline.
38 -----	Tyrosine.
39 -----	Mercurochrome.
40 -----	Furaltadone.
41 -----	Nitrofurantoin.
42 -----	Chlordantoin.
43 -----	Benzalkonium chloride.
44 -----	Butethamine hydrochloride.
45 -----	Butylaminobenzoate.
46 -----	Dibucaine hydrochloride.
47 -----	Ethylaminobenzoate.
48 -----	Lidocaine.
49 -----	Tetracaine.
50 -----	Amolanone hydrochloride.
51 -----	Diperodon hydrochloride.
52 -----	Orthocaine.
53 -----	Benzethonium chloride.
54 -----	Hexylresorcinol.

As noted above, the instant application is particularly directed to a novel medicated composition comprising a mineral oil, an active pharmaceutical agent, and a polyethoxylated fatty acid alcohol. In connection with said polyethoxylated fatty acid alcohol, it is noted that if only one such alcohol is employed in the subject composition said alcohol should contain 7 to 10 moles of ethylene oxide and preferably such alcohol should contain 18 carbon atoms. If the subject composition is to comprise a mixture of polyethoxylated fatty acid alcohol esters, preferably one employs the polyoxyethylene (7) oleyl ether and the polyoxyethylene (15) stearyl ether. Such a composition, as noted, has been found not only to be aesthetically pleasing, but in addition to provide a vehicle whereby one obtains an activity of the active ingredient, and in particular an increase in the activity of an antiseptic such as iodine, which has previously been unobtainable when such antiseptics have been incorporated into carriers of this type.

It should be apparent from the foregoing detailed description that the objects set forth hereinabove have been successfully achieved. Moreover, while there are shown and described present preferred embodiments of the invention it is to be distinctly understood that the

invention is not limited thereto but may be otherwise variously embodied and practised within the scope of the following claims.

Accordingly, what is claimed is:

- 5 1. An aqueous water-soluble medicated gelled oil composition consisting essentially of from about 18 to about 30% mineral oil; polyoxyethylene (15) stearyl ether; polyoxyethylene (7) oleyl ether; said ethers being present in an amount of from about 18 to about 25%; an effective amount of a topical medicament; and the remainder being a diluent selected from the group consisting of water and aqueous phosphate buffer.
- 10 2. A composition as defined in claim 1 wherein said medicament is selected from the group consisting of iodine, pramoxine hydrochloride, hexachlorophene, resorcinol, sulfur, a haloacetamide, chlorhexidine, merbromin, thimerosal, and mixtures thereof.
- 15 3. A composition according to claim 2 wherein said medicament is iodine and said diluent is water.
- 20 4. A composition according to claim 2 wherein said medicament is iodine and said diluent is phosphate buffer, and the pH of the composition is about 6.0.
- 25 5. A composition according to claim 2 wherein said medicament is iodine and pramoxine hydrochloride and said diluent is water.
- 30 6. A composition according to claim 2 wherein said medicament is iodine and hexachlorophene and said diluent is water.
- 35 7. A composition according to claim 2 wherein said medicament is hexachlorophene, sulfur, and resorcinol and said diluent is water.
- 40 8. A composition according to claim 2 wherein said medicament is hexachlorophene and said diluent is water.
- 45 9. A composition according to claim 2 wherein said medicament is thimerosal and said diluent is water.
- 50 10. A water-soluble gelled oil aerosol composition as defined in claim 1 further including a propellant.
- 55 11. A composition as defined in claim 10, wherein said mineral oil is present in an amount of from about 20 to about 25% and said ethers are present in an amount from about 19 to about 21%, said percentages being by weight of the total composition.

References Cited

UNITED STATES PATENTS

3,489,690 1/1970 Lachampt et al. ----- 424-170

OTHER REFERENCES

- Seiller—Chem. Abst., vol. 69 (1968), p. 30379x.
 Boehme—Chem. Abst., vol. 67 (1967), p. 65094m.
 Mitsui—Chem. Abst., vol. 66 (1967), p. 106179t.
 Mitsui—J. Soc. Cos. Chemists, vol. 20 (Mar. 4, 1969), pp. 199-202.

55 SAM ROSEN, Primary Examiner

U.S. Cl. X.R.

424-150, 164, 177, 181, 227, 249, 267, 273, 285, 291, 310, 320, 324, 326, 329, 346, 347, 358