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(54) **COMPOSITION FOR CONTACT LENS**

ZUSAMMENSETZUNG FÜR KONTAKTLINSE

COMPOSITION POUR LENTILLE DE CONTACT

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(73) Proprietor: **Pegavision Corporation**
Taoyuan City 333 (TW)

(72) Inventors:
- **CHANG, Han-Yi**
  New Taipei City 235 (TW)
- **CHEN, Li-Ju**
  Taipei City 105 (TW)

(74) Representative: **Viering, Jentschura & Partner mbB**
Patent- und Rechtsanwälte
Hamborner Straße 53
40472 Düsseldorf (DE)

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The instant disclosure relates to a composition for contact lenses; in particular, to a composition for contact lenses which can serve as a contact lens preservation solution.

2. Description of Related Art

[0002] Smartphones and computers are used frequently in today's information society, resulting in an increase in the population with myopia and a decrease in the age group of myopia. In consideration of user convenience and aesthetics, it is generally a good choice for people with myopia to wear contact lenses. However, most people with myopia need to wear contact lenses for extended periods of time. Although the material of the conventional contact lenses have been constantly improved to meet various requirements such as high water content and high oxygen permeability, the wearers thereof would still suffer from eye dryness due to decreased water content and experience eye discomfort due to dirt or secretion. Therefore, there is an urgent need for a maintenance solution that can be used to clean, rehydrate and preserve contact lenses. US2017056335 A1 discloses an ophthalmic composition comprising polysorbate 80 and a refreshing agent. WO9603158 A1 and US 6 228 323 B1 disclose compositions for contact lenses which include sodium lauroyl lactylate.

SUMMARY OF THE INVENTION

[0003] One aspect of the instant disclosure relates to a composition for contact lens which allows a contact lens wearer's eyes to feel comfortable during the period of initial wear and extended periods of continuous wear.

[0004] According to one of the embodiments of the instant disclosure, the composition for contact lenses includes an algefacient and a surfactant, and a water soluble polymer, wherein the surfactant is sodium lauroyl lactylate, wherein the algefacient includes one or a combination of menthol, camphor, borneol, menthyl lactate, menthone glycerol ketal, monomethyl succinate, and p-menthane-3,8-diol; and wherein the water soluble polymer includes PEG 400 and MPC in a molar ratio of 1:20.

[0005] Based on the above, by cooperatively using the algefacient and the surfactant, wherein the surfactant is sodium lauroyl lactylate and the expression of the algefacient in the composition of a contact lens can be performed effectively. Therefore, the discomfort and foreign matter sensation in the eyes of contact lens wearers can be reduced or relieved, providing long-lasting cool and moist sensations to the eyes.

[0006] In order to further appreciate the characteristics and technical contents of the instant disclosure, references are hereunder made to the detailed descriptions and appended drawings in connection with the instant disclosure. However, the appended drawings are merely shown for exemplary purposes, rather than being used to restrict the scope of the instant disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Fig. 1 is a perspective view showing a contact lens and a composition for contact lenses according to the instant disclosure in a container.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0008] The aforementioned illustrations and following detailed descriptions are exemplary for the purpose of further explaining the scope of the instant disclosure. Other objectives and advantages related to the instant disclosure will be illustrated in the subsequent descriptions and appended drawings.

[0009] Referring to FIG. 1, the instant disclosure provides a composition for contact lenses which can serve as a preservation solution and be hermetically sealed with the contact lenses in a container. In practice, the contact lenses are immersed in direct contact with the composition. When the user wishes to wear the contact lenses, the user takes the contact lens out of the composition and put the contact lenses on his/her eyes. More specifically, the ingredients of the composition absorb onto the surface of the contact lenses and then transfer into the user's eyes.

[0010] The composition according to the instant embodiment is intended for use in connection with soft and rigid contact lenses. The term "soft contact lens" can refer to a hydrous soft contact lens made from hydrogels (i.e., hydrogel contact lenses) and a non-hydrous soft contact lens made from copolymers of butyl acrylate and butyl methacrylate.

Furthermore, the composition according to the instant embodiment is applicable to the soft contact lenses in U.S. FDA category Group I-IV. Group I-IV lenses often contain materials identified in the market as: alphafilcon, asmofilcon, balafilcon, ethafilcon, hefilcon, hilafilcon, lidofilcon, lotrafilcon, methafilcon, nelfilcon, ocufilcon, omafilcon, phemfilcon, polymacon, tefilcon, tetrafilcon, vasurfilcon, vifilcon, senofilcon, galyfilcon, enfilcon, comfilcon, narafilcon, delefilcon, efrofilcon, and filicon II 3.

[0011] The composition according to the instant embodiment mainly includes a base solution, an algefacient, a surfactant, and a water soluble polymer. The algefacient, the surfactant, and the water soluble polymer are uniformly dispersed in the base solution.

[0012] In the instant embodiment, the base solution is a physiological saline solution with a buffer containing boric acid or phosphorous acid. The buffer has a pH buffering capacity and is configured to adjust the pH of the composition to a pH between 6.8 and 7.6. In addition, the base solution can include an appropriate amount of sodium chloride or potassium chloride to maintain the osmolality of the composition at a value between 250 Osmol/Kg and 350 Osmol/Kg.

[0013] The buffer can be selected from boric acid, borate (e.g., sodium tetraborate), phosphorous acid, or phosphate (e.g., sodium hydrogen phosphate and sodium dihydrogen phosphate). It should be noted that a buffer may be used alone or two or more different buffers may be used in combination in the base solution. In addition, the concentration of the buffer may be appropriately adjusted depending on its kind or the kind of the other ingredients.

[0014] The algefacient is added to reduce or relieve the discomfort and foreign matter sensation in the eyes and give the eyes a cool, fresh sensation. The algefacient includes one or a combination of menthol, camphor, borneol, menthyl lactate, menthone glycerol ketal, monomethyl succinate, and p-menthane-3,8-diol. The content of the algefacient is in the range between 0.001% (w/v) and 0.5 % (w/v), preferably between 0.001% (w/v) and 0.25 % (w/v), to avoid irritating the eye.

[0015] The surfactant is added to clean and moisturize a contact lens, in which protein and lipid deposits on the surfaces of the contact lens can be removed. The surfactant is sodium lauroyl lactylate. The content of the surfactant is in the range between 0.001% (w/v) and 2% (w/v), and preferably between 0.001% (w/v) and 0.5 % (w/v).

[0016] It should be noted that by cooperatively using the algefacient and the surfactant, the expression of the algefacient in the composition for contact lenses can be performed effectively. Therefore, eye related symptoms such as eye fatigue, eye dryness, eye pruritus, and eye pain can be reduced or relieved, and a cool fresh sensation in the eyes can be maintained for a long period of time.

[0017] The water soluble polymer is added to moisten and lubricate the eyes, and also helps to keep the ingredients beneficial to the eyes in contact with the contact lens. For example, if the composition for contact lenses includes one or more vitamins (e.g., A, B and E), the vitamin(s) can be attached to the surface of the contact lens by interacting with the water soluble polymer. The water soluble polymer includes PEG 400 and MPC in a molar ratio of 1:20. The content of the water soluble polymer is in the range between 0.05% (w/v) and 5% (w/v).

[0018] Comparative Examples 1-5 and Comparative Examples 1-2 are shown in Table 1. Each of the compositions obtained respectively in Comparative Examples 1-5 and Comparative Examples 1-2 was used in full contact with the contact lenses. The contact lenses were then put on the user's eyes, and a VAS (Visual analogue scale) method was used to evaluate the sensations of lubrication, comfort, coolness, and moisture in the eyes during the period of initial wear (time 1) and after wearing for 30 minutes (time 2) and 60 minutes (time 3). The evaluation results of for the Comparative Examples 1-5 and the Comparative Examples 1-2 are shown in Table 2. Scores for each of the items, as shown in Table 2, are average scores calculated from three users (i.e., six eyes).

Table 1

	unit: g						
	Examples					Comparative ex	
	1	2	3	4	5	1	2
water	2000	2000	2000	2000	2000	2000	2000
sodium chloride	10-20	10-20	10-20	10-20	10-20	10-20	10-20
boric acid	8-16	8-16	8-16	8-16	8-16	8-16	8-16
sodium tetraborate	0.5-4.5	0.5-4.5	0.5-4.5	0.5-4.5	0.5-4.5	0.5-4.5	0.5-4.5
TWEEN 80™	0.01-5	0.01-5	-	0.01-5	0.01-5	-	-
PVP	0.01-5	0.01-5	0.01-5	0	0.01-5	-	-
GEROPON™ SBFA-30	0	0.01-5	0.01-5	0	0.01-5	-	-
polyoxyethylene hardened castor oil	-	-	-	0.01-2.5	0.01-2.5	-	-

(continued)

	unit: g						
	Examples					Comparative ex	
	1	2	3	4	5	1	2
Hyaluronic acid (HA)	0-50	0-50	0-50	0-50	0-50	-	0-50
PEG400	0-50	0-50	0-50	0-50	0-50	-	0-50
MPC	0-50	0-50	0-50	0-50	0-50	-	0-50
menthol	0-4	0-4	0-4	0-4	0-4	-	0-4
camphor	0-4	0-4	0-4	0-4	0-4	-	0-4
borneol	0-4	0-4	0-4	0-4	0-4	-	0-4
menthyl lactate	0-4	0-4	0-4	0-4	0-4	-	0-4
menthone-glycerol ketal	0-4	0-4	0-4	0-4	0-4	-	0-4
monomethyl succinate	0-4	0-4	0-4	0-4	0-4	-	0-4
p-menthane-3,8-doil	0-4	0-4	0-4	0-4	0-4	-	0-4

Table 2

evaluation items	wear-in time	self-feeling score	
		Examples	Comparative ex
lubrication sensation	immediately right after	7	8
	after 30 minutes	7	8
	after 60 minutes	6	8
comfort sensation	immediately right after	7	8
	after 30 minutes	7	8
	after 60 minutes	7	8
coolness sensation	immediately right after	NA	9
	after 30 minutes	NA	6
	after 60 minutes	NA	4
moisture sensation	immediately right after	8	10
	after 30 minutes	8	9
	after 60 minutes	8	9

[0019] The composition for contact lenses in which the algefacient and the surfactant are cooperatively used and the surfactant is sodium lauroyl lactylate. Accordingly, the expression of the algefacient can be performed effectively, so that the discomfort and foreign matter sensation in the eyes of contact lens wearers can be reduced or relieved, and long-lasting cool and moist sensations can be provided to the eyes.

Claims

1. A composition for contact lenses which includes an algefacient, a surfactant, and a water soluble polymer, wherein the surfactant is sodium lauroyl lactylate, wherein the algefacient includes one or a combination of menthol, camphor, borneol, menthyl lactate, menthone glycerol ketal, monomethyl succinate, and p-menthane-3,8-diol; and wherein the water soluble polymer includes polyethylene glycol 400 (PEG 400) and methacryloyloxyethyl phosphorylcholine

(MPC) in a molar ratio of 1:20.

2. The composition for contact lens according to claim 1, wherein the content of the surfactant is in the range between 0.001% (w/v) and 0.5% (w/v).

3. The composition for contact lens according to claim 1, wherein the algefacient is menthol.

4. The composition for contact lens according to claim 1 or 3, wherein the content of the algefacient is in the range between 0.001% (w/v) and 0.25 % (w/v).

5. The composition for contact lens according to claim 1, wherein the content of the water soluble polymer is in the range between 0.05% (w/v) and 5% (w/v).

6. The composition for contact lens according to claim 1, further including a buffer, wherein the buffer includes boric acid and sodium tetraborate.

Patentansprüche

1. Zusammensetzung für Kontaktlinsen, die ein Algefaciens, ein Tensid und ein wasserlösliches Polymer enthält, wobei das Tensid Natriumlauroyllactylat ist, wobei das Algefaciens eines oder eine Kombination von Menthol, Kampfer, Borneol, Menthyllactat, Menthonglycerolketal, Monomethylsuccinat und p-Menthan-3,8-diol enthält; und wobei das wasserlösliche Polymer Polyethylenglycol 400 (PEG 400) und Methacryloyloxyethylphosphorylcholin (MPC) in einem molaren Verhältnis von 1:20 enthält.

2. Die Zusammensetzung für Kontaktlinsen gemäß Anspruch 1, wobei der Gehalt an Tensid im Bereich zwischen 0,001% (w/v) und 0,5% (w/v) liegt.

3. Die Zusammensetzung für Kontaktlinsen gemäß Anspruch 1, wobei das Algefaciens Menthol ist.

4. Die Zusammensetzung für Kontaktlinsen gemäß Anspruch 1 oder 3, wobei der Gehalt an Algefaciens im Bereich zwischen 0,001 % (w/v) und 0,25 % (w/v) liegt.

5. Die Zusammensetzung für Kontaktlinsen gemäß Anspruch 1, wobei der Gehalt an wasserlöslichem Polymer im Bereich zwischen 0,05 % (w/v) und 5 % (w/v) liegt.

6. Die Zusammensetzung für Kontaktlinsen gemäß Anspruch 1, des Weiteren enthaltend einen Puffer, wobei der Puffer Borsäure und Natriumtetraborat enthält.

Revendications

1. Composition pour lentilles de contact qui comprend un agent de rafraîchissement, un tensioactif, et un polymère hydrosoluble, dans laquelle le tensioactif est le lauroyl lactylate de sodium, dans laquelle l'agent rafraîchissant comprend un ou une combinaison du menthol, du camphre, du bornéol, du lactate de menthyle, du glycérol cétal de menthone, du succinate de monométhyle, et du p-menthane-3,8-diol ;
et dans laquelle le polymère hydrosoluble comprend le polyéthylène glycol 400 (PEG 400) et la méthacryloyloxyéthyl phosphorylcholine (MPC) dans un rapport molaire de 1:20.

2. Composition pour lentille de contact selon la revendication 1, dans laquelle la teneur du tensioactif se trouve dans la plage entre 0,001 % (m/v) et 0,5 % (m/v).

3. Composition pour lentille de contact selon la revendication 1, dans laquelle l'agent de rafraîchissement est le menthol.

4. Composition pour lentille de contact selon la revendication 1 ou 3, dans laquelle la teneur de l'agent de rafraîchissement se trouve dans la plage entre 0,001 % (m/v) et 0,25 % (m/v).

5. Composition pour lentille de contact selon la revendication 1, dans laquelle la teneur du polymère hydrosoluble se

trouve dans la plage entre 0,05 % (m/v) et 5 % (m/v).

6. Composition pour lentille de contact selon la revendication 1, comprenant en outre un tampon, dans laquelle le tampon comprend l'acide borique et le tétraborate de sodium.

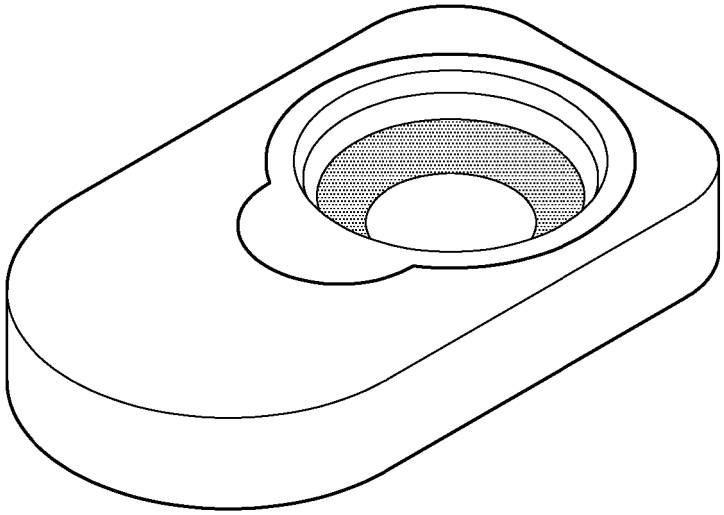

Fig.1

REFERENCES CITED IN THE DESCRIPTION

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