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CA 2085892 C 2002/12/10

(11)(21) **2 085 892**

(12) **BREVET CANADIEN
CANADIAN PATENT**

(13) **C**

(86) Date de dépôt PCT/PCT Filing Date: 1992/04/11
(87) Date publication PCT/PCT Publication Date: 1992/10/29
(45) Date de délivrance/Issue Date: 2002/12/10
(85) Entrée phase nationale/National Entry: 1992/12/18
(86) N° demande PCT/PCT Application No.: EP 1992/000823
(87) N° publication PCT/PCT Publication No.: 1992/018097
(30) Priorité/Priority: 1991/04/20 (91106402.0) CH

(51) Cl.Int.⁵/Int.Cl.⁵ A61K 7/46
(72) Inventeurs/Inventors:
BAYDAR, AHMET E., FR;
CAYLUS, GHISLAINE-HENRIETTE, FR;
SELDEN, CHRISTOF B., FR
(73) Propriétaire/Owner:
GIVAUDAN-ROURE (INTERNATIONAL) S.A., CH
(74) Agent: FETHERSTONHAUGH & CO.

(54) Titre : BASES POUR PARFUMS
(54) Title: PERFUME BASES

(57) Abrégé/Abstract:
Perfume base, containing usnic acid and a perfumery raw material exhibiting an aromatic ring.



PCT

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International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁵ : A61K 7/32, 7/48 2C85892	A1	(11) International Publication Number: WO 92/18097 (43) International Publication Date: 29 October 1992 (29.10.92)
(21) International Application Number: PCT/EP92/00823 (22) International Filing Date: 11 April 1992 (11.04.92) (30) Priority data: 911064020 20 April 1991 (20.04.91) EP (34) Countries for which the regional or international application was filed: CH et al. (71) Applicant (for all designated States except US): GIVAUDAN-ROURE (INTERNATIONAL) S.A. [CH/CH]; CH-1214 Vernier (CH). (72) Inventors; and (75) Inventors/Applicants (for US only): BAYDAR, Ahmet, Ennis [US/FR]; Résidence Belle-Bleue, Square Frederic-Mistral, 6, rue Brougham, F-06400 Cannes (FR). CAYLUS, Ghislaine-Henriette [FR/FR]; 56, chemin de la Chapelle-S.-Antoine, Mas des Sources, F-06130 Grasse (FR). SELDEN, Christof, Bastian [AT/FR]; 41, avenue Victoria, F-06130 Grasse (FR).		(74) Agent: URECH, Peter; P.O. Box 3255, CH-4002 Basle (CH). (81) Designated States: AT (European patent), BE (European patent), CA, CH (European patent), DE (European patent), DK (European patent), ES (European patent), FR (European patent), GB (European patent), GR (European patent), IT (European patent), JP, LU (European patent), MC (European patent), NL (European patent), SE (European patent), US. Published With international search report.
(54) Title: PERFUME BASES (57) Abstract Perfume base, containing usnic acid and a perfumery raw material exhibiting an aromatic ring.		

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Perfume bases

Usnic acid, a natural well-known antimicrobial agent, has been demonstrated to be extremely effective against Gram-positive bacteria, fungi, and yeast with Minimum Inhibitory Concentrations as low as 10 ppm for certain species [M. Fontana, G. Proserpio, Riv. Ital. Essenze, Profumi, Piante Off., Aromi, Saponi, Cosmetici, Aerosol (RIPOAM), 1974, 56, 315-336]. The use of free usnic acid in cosmetic formulations is complicated due to its insolubility in all commonly used solvent systems [H. Bergerhausen, Cosmetics and Toiletries 1976, 91, 25-26; Manufacturing Chemist 1989, 22-27]. Soluble derivatives of usnic acid, such as its alkali and ammonium salts, as well as certain esters, have been reported [Handelsgesellschaft Schlosser GmbH, 1975, Ger. Offen. 2354517. Orissa Drebing GmbH, 1975, Ger. Offen. 2351927. Orissa Drebing GmbH, 1975, Ger. Offen. 2351864. Orissa Drebing GmbH, 1976, Ger. Offen. 2432484.]. The major drawbacks of these derivatives are their insufficient stability properties, such as decolorization, pH-sensitivity, and reduction of antimicrobial activity.

Usnic acid [$C_{18}H_{16}O_7$, 2,6-Diacetyl-7,9-dihydroxy-8,9b-dimethyl-1,3(2H,9bH)-dibenzofurandione] exhibits the following characteristics:

MW 344.32; mp 201-203°C, $[\alpha]_D +488^\circ$ (c 0.4, $CHCl_3$); mp 204°C, $[\alpha]_D +509.4^\circ$ (c 0.697, $CHCl_3$);

Solubility at 25°C (g/100 ml): water <0.01, acetone 0.77, ethyl acetate 0.88, ethanol 0.02, chloroform 4.6, pyridine 2.12, benzene 0.94, dioxane 0.99, isopropyl alcohol 0.28, propylene glycol <0.01, dipropylene glycol 0.01, diethyl phthalate 0.45.

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Certain perfumery raw materials now have been found to solubilize usnic acid - and leading to stable solutions. This finding allows the direct use of usnic acid, this natural antimicrobial agent isolated from alpine
5 lichen, in numerous types of perfumes, cosmetic and toiletry formulations, without the usually required derivatization to improve its solubility.

Accordingly, in one aspect the invention provides a perfume base containing usnic acid in a concentration of
10 about 0.3% w/w to about 3% w/w, preferably about 0.5% w/w to about 2% w/w, and a perfumery raw material exhibiting an aromatic ring.

In another aspect the invention provides the use of a perfumery raw material exhibiting an aromatic ring as a
15 solubilizing agent for usnic acid.

The natural and synthetic perfumery raw materials are all characterized by exhibiting an aromatic ring. In the foreground of the interest are such standard perfumery materials as:

20 benzyl salicylate (1), benzyl benzoate (2), anisic aldehyde (3), isoeugenol methylether (4), cinnamyl acetate (5), eugenol (6) and anethol (7).

These perfumery raw materials exhibiting the desired solubilizing property are thus not only odorants,
25 but also fixatives, blenders and modifiers.

The amount of any of (1) to (7) in the perfume bases is not too critical. Convenient amounts are:

about 20 to about 90% of any of (1) to (7).
Mixtures of any one of (1) to (7) are also possible.

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The maximum solubility (g/100 ml) of pure usnic acid in the above pure compounds (1) to (7) at 25°C is:

benzyl salicylate 3.01, benzyl benzoate 1.93, anisic aldehyde 4.06, isoeugenol methylether 2.69, cinnamyl
5 acetate 1.60, eugenol 2.18, anethol 4.30.

Examples

Three formulae of perfume compositions containing different concentrations of free usnic acid are listed below:

10 Formula 1.

Compound	wt. %
Usnic Acid	0.5
1	20.0
2	18.0
6	2.0
Linalool	8.0
Benzyl Acetate	8.0
Hexyl Cinnamic Aldehyde	13.5

	Phenyl Ethyl Alcohol	2.0
	Hydroxycitronellal	4.0
	Ylang Ylang Oil	2.0
	Aldehyde C-14	6.0
5	Aldehyde C-18	6.0
	Methyl Anthranilate	4.0
	Indolene-50 [8,8-bis-(3H-indol-3-yl)-2,6-	
	dimethyl-2-octanal 50% in castor oil]	2.0
	Methyl Salicylate	4.0

10 100.00

Formula 2.

Compound		wt. %
	Usnic Acid	1.50
	1	70.0
15	2	7.0
	4	0.30
	Linalool	1.00
	Benzyl Acetate	7.00
	Linalyl Acetate	0.70
20	Hexyl Cinnamic Aldehyde	2.30
	Phenyl Ethyl Alcohol	3.00
	Hydroxycitronellal	5.70
	Geraniol Extra	0.30
	Cinnamic Alcohol	0.15
25	Aldehyde C-14 (10% in DEP)	0.15
	Aldehyde C-16 (10% in DEP)	0.15
	Aldehyde C-18 (10% in DEP)	0.30
	Argeol [hydroxycitronellal-methyl	
	anthranilate Schiff base]	0.15
30	α -Ionone	0.30
		100.00

Formula 3.

Compound		wt. %
5	Usnic Acid	2.00
	1	35.0
	2	0.80
	6	0.20
	Linalool	0.80
10	Phenyl Ethyl Alcohol	6.70
	Geraniol Extra	0.90
	Citronellol Extra	0.90
	Geranyl Acetate	0.90
	Phenyl Aethyl Acetate	0.30
15	Diphenyl Oxide (10% in DEP)	0.01
	Aldehyde C-9 (10% in DEP)	0.02
	Aldehyde C-18 (10% in DEP)	0.02
	Methyl Ionantheme-100 [α -methyl ionone] (10% in DEP)	0.02
	Iso Menthone (10% in DEP)	0.08
20	Rose Oxide (10% in DEP)	0.04
	Methyl Octine Carbonate (10% in DEP)	0.01
	Phenyl Aethyl Phenyl Acetate	0.80
		100.00

Perfume compositions containing free usnic acid can thus be readily incorporated in the usual manner and using the well-known techniques into perfumed consumer products, e.g. into a wide variety of cosmetic and toiletry formulations, such as deodorants, antiperspirants, shower gels, soaps, sanitary pads, skin creams, lotions, tooth paste, mouth wash, etc. Such tooth paste may contain the usual ingredients such as abrasives, surfactants, humectants, binders, therapeutic ingredient(s), if necessary, anti tartar ingredients, preservatives, whiteners, etc.

Two example formulations of applications in a deodorant stick and a deodorant non-aerosol spray are given below.

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Deodorant Stick:

	Propylene glycol	63.00%
	Sodium stearate	5.00%
	Deionized water	25.00%
5	Hydroxyethylcellulose (Natrosol 250) [*]	0.20%
	Isostearamidopropyl PG diethyl ammonium chloride (Lexquat AMG-IS)	2.00%
	Lauramide DEA (Standamid LD [*])	4.00%
	Formula 1 (or 2, or 3)	<u>0.80%</u>
10		100.00%

Non-Aerosol Deodorant Spray:

	Propylene glycol	3.00%
	Water	20.50%
	Ethanol	75.00%
15	Formula 1 (or 2, or 3)	<u>1.50%</u>
		100.00%

Shower gel:

	Conventional shower gels, such as described in
	Cosmetic & Toiletries <u>104</u> (1989), 84 seq., in particular 86, or in
20	Cosmetic & Toiletries <u>99</u> (1984) 96
	may contain for example 0,80 parts and 3,00 parts per weight, respectively,
	of Fragrance Formula 1 (or 2, or 3)

*Trade Mark

Tooth paste:

	Calcium carbonate	50.00%
	Sodium lauryl sulphate	1.50%
	Glycerol	10.00%
5	Sorbitol	15.00%
	Gum tragacanth	1.50%
	Sodium monofluorophosphate	0.90%
	Tetrasodium pyrophosphate	0.25%
	Zinc citrate trihydrate	0.50%
10	Saccharin	0.10%
	Formaldehyde (40%)	0.06%
	anethol based perfume or flavour	1.00%
	Water to	100.00%

The usnic acid in anethol is conveniently ca. 1.5 to 2.5% per weight.

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CLAIMS:

1. Perfume base, containing usnic acid in a concentration of about 0.3% w/w to about 3% w/w and a perfumery raw material exhibiting an aromatic ring, wherein
5 the perfumery raw material is selected from the group consisting of benzyl salicylate, benzyl benzoate, anisic aldehyde, isoeugenol methylether, cinnamyl acetate, eugenol and anethol.
2. Perfume base according to claim 1, wherein the
10 perfumery raw material is selected from the group consisting of benzyl salicylate, benzyl benzoate, anisic aldehyde, isoeugenol methylether, cinnamyl acetate and eugenol.
3. Perfume base according to claim 1 or 2, wherein the concentration of usnic acid is about 0.5% w/w to about
15 2% w/w.
4. The use of a perfumery raw material exhibiting an aromatic ring, as a solubilizing agent for usnic acid.
5. The use of benzyl salicylate, benzyl benzoate, anisic aldehyde, isoeugenol methylether, cinnamyl acetate,
20 eugenol and anethol according to claim 4.
6. The use of benzyl salicylate, benzyl benzoate, anisic aldehyde, isoeugenol methylether, cinnamyl acetate and eugenol according to claim 4.

FETHERSTONHAUGH & CO.

OTTAWA, CANADA

PATENT AGENTS