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(54) Title: ACTIVE FORMULATIONS BASED ON ESSENTIAL OIL OF PLANTS OF THE GENUS PROTIUM, GUATTERIA, CYPHERUS AND THE MIXTURE THEREOF

(57) Abstract: The present invention provide formulations with antibacterial and biofilm removing actions comprising plant extracts, comprising at least one plant oil wherein the plant is selected from the group comprising the genus Protium, Guatteria, Cyperus in a suitable vehicle.

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### Description

ACTIVE FORMULATIONS BASED ON ESSENTIAL OIL OF PLANTS OF THE GENUS PROTIUM, GUATTERIA, CYPERUS AND THE MIXTURE THEREOF.

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#### Field of the Invention

The present invention is directed to the use of an active formulation based on plant extracts, wherein said formulations possess plant extracts with antimicrobial and biofilm removing properties. The formulations of the present invention comprise at least one essential oil from plants selected from genus Protium, Guatteria and Cyperus, in a suitable vehicle. The present invention is directed to products related to the fields of dentistry, medicine, veterinary, personal hygiene, cleaning and pharmaceutical compositions for human and animal use.

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#### Background of the invention

The antimicrobial properties of plant extracted substances are known due to its empirical use throughout the centuries and are being recently confirmed by science. Many researches, in several countries, including Brazil, owner of one of the world's largest biodiversity, were performed in view of the popular knowledge of the native species. Extracts and essential oils from some species were efficient in fighting microorganisms, such as filamentous fungi, yeast and bacteria. Some plants are described as possessing antimicrobial properties (such as antibacterial and antifungal) such as: olive tree (*Olea europaea*), sunflower (*Helianthus annuus*), andiroba (*carapa guianensis*), garlic (*Allium sativum*), sessile joyweed (*Althernanthera sessilis*) and some marine algae. These and other plants can be found in several countries besides Brazil, such as Cuba, India, Mexico and Jordan. Around the world, antimicrobial products are gaining special attention due to the increase in bacteria population resistance to conventional antibiotics; considering that no new class of antibiotics was discovered in the last years (1).

30



Certain chemical classes found in plants with antimicrobial activity (antibacterial and antifungal) can be cited such as terpenes and fenols (thymol, carvone, carvacrol, menthol and murolene) (2,3). Despite the fact that the mechanism of action of these substances is still unknown, there are clues that suggest that the action is associated with the lipophilic character of the compounds, which builds up in cell membranes, leading to a loss of energy of these cells (4,5)

Plants from several regions from Brazil possess other farmacological properties and have being used as natural medicines by local population, treating several tropical diseases, such as schistosomiasis, leishmaniasis, malaria and fungal and bacterial infections (6). Despite the vast biodiversity of Brazil, antimicrobial activity data is available only for 44 plant species from 20 families, including native and exotic species. Practical uses that can be suggested for these plants include phytotherapeutical products for human and animal use, as well as food industry and cleaning products.

The next paragraphs give details of patents and scientific papers related to products containing natural products with antimicrobial action using the plants of the present invention: *Protium*, *Guatteria*, *Cyperus* and *Aniba*.

The species *Protium heptaphyllum* March is a plant belonging to genus *Protium* and to the family *Burseraceae*, native in Brazilian cerrado. Some genus of this family (*Elaphrium*, *Icica*, *Canarium* and *Protium*) are producers of oily resins also known as "elemi". Siani et al. (10) describe the essential oils extracted from the leaves and the resins from *Protium* species as having anti-inflammatory activity, but a product containing said essential oils has not been suggested.

No document in patent literature regarding the use of *Protium* plants for the purposes herein described was found.

Document US 2007/0166255 describes a formulation containing natural lignans for topical use in the prevention and treatment of sunburns and wounds. These lignans are found as conjugated glycosides in several parts of plants of several genus, being associated to fibers, specially in conifers.

Plants from genus *Guatteria* belongs to family Annonaceae, dicotyledons from Magnoliales order. This group includes several fruits used as foods such as soursop (*Annona muricata*), fruta-do-conde (*Annona coriacea*) and sugar-apple (*Annona squamosa*). *Guatteria citriodora* Ducke, also known as laranjinha or laranjeirinha, is a tree from this family, native from Amazon region of Brazil. *Guatteria* genus plants have been described in scientific papers containing antileishmanial and antimalarial activity.

The patent literature contains few documents related to *Guatteria* plants.

In documents WO 04/084801 and WO 05/035783, these plants are cited for treatment of leishmaniasis. It is known that this plant contain aporphinic alkaloids, an alkaloid subclass, described in these documents as useful for both visceral and cutaneous leishmaniasis, in both animals and humans.

Document US 2005/0181077 describes the use of this genus and the discover of medicines. In this document, two families used in the present invention, namely Annonaceae and Cyperaceae are suggested; however, only the genus *Guatteria* is suggested in the present invention. There is no suggestion of the possibility of using plants from *Cyperus* genus, unlike the present invention. The pharmaceutical formulation proposed is aimed to the treatment of AIDS while the present invention is not.

Documents WO 03/08278 and US 6,590.127 suggest the use of *Guatteria gaumeri* in the preparation of a pharmaceutical formulation useful in treating hypercholesterolemia.

No document in patent literature regarding the use of *Guatteria citriodora* for the purposes herein described was found.

*Aniba roseodora* Ducke, also known as rosewood, is a 30-meter tall tree that can be found in north and western Amazon, specially in the states of Amazônia, Pará and Amapá.

Documents US 7,150.888, US 7,048,953 and US 2004/0009245 disclose antibacterial activity of *Aniba roseodora* essential oil. In these documents is suggested the inhalation of essential oil vapors for antibacterial effects in the



respiratory tract. In the abovementioned documents there is no suggestion of spray formulations for skin wounds.

Document WO 05/087244 describes a pharmaceutical formulation with antimicrobial activity containing at least two essential oils, derived from several  
5 genus of plants, including Aniba, and more specifically Aniba roseodora, also used in the present invention. The antimicrobial activity aimed in this document in antifungal, while the present invention is not.

Document US 7,060,306 described a formulation for treatment and relief of skin disorders such as dermatitis, psoriasis, cutaneous rash. In the  
10 formulation disclosed, the essential oil of 11 natural agents, such as karate butter, mango butter, beeswax, chamomile, carrot seed oil, rosemary oil, cedar wood oil, pau-rosa oil, rose fruits oil, graprefruit seed extract and sweet orange oil, are suggested in formulations of lotions or soaps for treatment of skin disorders. The genus used in the present invention, namely Cyperus, Guatteria,  
15 Protium or Aniba, have not been cited in this document.

The use of Aniba extract is also suggested in documents EP 1 239 735 and Wo 06/101409, respectively, regarding formulations related to insecticide activity and a cosmetic formulation, including a skin spray formulation. However, document WO 06/101409 does not mention the simultaneous use of Protium  
20 and Guatteria species.

No document related to the use of essential oils obtained from Aniba plants in disinfectant formulations was found.

The remaining genus used in the present invention, Cyperus, belongs to Cyperaceae family, which includes about 600 species of aquatic plants, that can  
25 be found in tropical and temperate zones of all continents. This genus is known as one of the most invasive weeds known, being allelopathic, i.e. its roots release harmful substances to other plants. It is used in alternative medicine to treat sickness, fever, inflammation and pain.

Several patents disclose Cyperus plants. Document WO 06/117516  
30 discloses a formulation with antibacterial activity for topic use useful for treating infections caused by microorganisms, such as Escherichia coli, in which the

species *Cyperus esculentus* is used. This document still suggests that *C. esculentus* extracts can be used alone or in combination with other essential oils in aromatherapy. No reference was found regarding the use of *Cyperus rotundus* Linn.

5 Document WO 06/096239 describes the use of *Cyperus* plants as part of a antimicrobial formulation used to provide skin benefits. Like WO 06/117516, this plant's extract is used as a natural oil optionally included to provide fragrance.

10 Documents US 4,569,843 and US 4,696,818 reveal a method for treatment of drug abuse comprising oral administration of a herbal formulation, containing *Radiz angelica sinensis*, *Herba pogostemi*, *Cyperus rotundus* and *Squama manitis pendactilae*. Document US 4,826,684 reveals a production process of a composition for use in insulin-dependent diabetes treatment. The main active is a mixture of terpenes from *Cyperus rotundus* Linn, being orally  
15 administered. Document US 5,476,651 reveals the use of a extract of *Cyperus rotundus* Linn in the preparation of a cosmetic or pharmaceutical composition for the promotion of skin and hair pigmentation or for treatment of pigmentation disorders. Such documents propose different uses and formulations when compared with the present invention, i.e. the technical problems solved are  
20 different, as well as the technical solutions proposed therein.

Document US 5,906,825 describes the use of *Cyperus* plant extracts as part of polymers comprising antimicrobial agents and methods for production of them. This plant is described as a phytochemical that can be added to a product as a biocidal agent (expression used collectively for disinfectants, chemical  
25 sterilizers, antiseptic and preservatives). The abovementioned document does not anticipate or overlap with the present invention, since essential oils of *Protium* and/or *Guatteria* plants are not used.

The scientific literature listed below, related to the prior art, does neither anticipates nor suggests, directly or indirectly, any of the objects of the present  
30 invention.

1 BAQUERO F, BLÁZQUEZ J (1997) *Tree* 12:482-487



2 SMID EJ, KOEKEN JPG, GORRIS LGM (1996) In: *Modern Fungicides and Antimicrobial Compounds*, Lyr H., Russell PE, Sisler HD Eds., Intercept: Andover, UK, 173-180

3 HELANDER IM, ALAKOMI HL, LATVA-KALA K, MATTILA-SANDHOLM T,  
5 POL I, SMID EJ, GORRIS LGM, VON WRIGHT, A (1998) *J. Agric. Food Chem.* 46:3590-3595

4 CONNER DE (1993) In: *Antimicrobials and Foods*, Davidson PM, Branem AL Eds, Dekker: New York, 441-468

5 SIKKEMA J, DE BONT JAM, POOLMAN B (1995) *Microbiology Reviews*  
10 59:201-222

6 ALVES, TMA, SILVA AF, BRANDÃO M, GRANDI TSM, SMÂNIA EF, SMÂNIA JÁ, ZANI CL (2000) *Mem. Inst. Oswaldo Cruz* 95:367-373

7 MONTENEGRO H, GUTIERREZ M, ROMERO LI, ORTEGA-BARRIA E, CAPSON TL, CUBILLA RIOS L (2003) Aporphine alkaloids from *Guatteria* spp.  
15 with leishmanicidal activity. *Planta medica*, 69: 677-679.

8 FISHER DC, DE AMORIM GUALDA NC, BACHIEGA D, CARVALHO CS, LUPO FN, BONOTTO SV, ALVES O, YOGI A, SANTI SM, AVILA PE, KIRCHGATTER K, MORENO PR. *Acta Trop.* 2004 Nov-Dec;92(3):261-6

9 WENIGER B, ARAGON R, DEHARO E, BASTIDA J, CODINA C, LOBSTEIN  
20 A, ANTON R. *Pharmazie.* 2000 Nov;55(11):867-8

10 SIANI, AC; RAMOS, MFS; LIMA, OM; SANTOS, RR; FERREIRA, EF; SOARES, ROA.; ROSAS, EC; SUSUNAGA, GS; GUIMARÃES, AC; ZOGHBI, MGB, HENRIQUES, MGMO *J. Ethnopharmacol.*, 1999, 47; 890-892

25 In summary, the present invention provides a new combination of natural agents with antimicrobial and biofilm removing properties. This combination, which includes necessarily essential oils from plants belonging to genus *Cyperus* and/or *Guatteria* and/or *Protium* and, at least, the essential oil of plants from other (or the same) genus, being the preferred genus in the present  
30 invention the genus *Aniba*. As described above, formulations containing this combination of essential oils with this type of action are unknown.

### Objects of the Invention

The present invention has as main innovation an active formulation based on plant extracts.

5 It is an object of the present invention an active formulation based on plant extracts comprising:

a) at least one essential oil from plants selected from the group which comprises the *Protium*, *Guatteria*, *Cyperus* genus and mixtures thereof;

b) a suitable vehicle.

10 Advantageously, the essential oils from a) can be obtained from any part of the plant, as stem, flowers, fruits, leafs, branches, seeds and roots. In one preferred embodiment, the selected plants are *Protium heptaphyllum* March, *Guatteria citriodora* Ducke and/or *Cyperus rotundus* Linn.

15 In another embodiment, the formulation additionally comprises an essential oil from plants selected from the group which comprises plants from *Aniba* genus.

In one advantageous embodiment, the selected plants are *Aniba roseodora* Ducke and an essential oil which can be obtained from any part of the plant as stem, flowers, fruits, leafs, branches, seeds and roots.

20 The present invention also provides products with biofilm removing and antimicrobial properties, wherein such products comprise the active formulation and other ingredients. Specially, the product is a phytotherapeutical and/or cosmetic and provides a formulation directed to products related to the fields of dentistry, medicine, veterinary, personal hygiene, cleaning and pharmaceutical compositions for human and animal use.

25 The products related to personal hygiene comprise phytotherapeutical formulations for toothpastes, dental cream, dental gel, oral rinse, prophylactic cream, liquid soaps, glycerinated soaps, calcium hidroxy pastes, healing spray, surfaces oil-based disinfectants and toothbrushes, prosthesis and orthodontic retainers. More specifically, the present invention provides formulations for  
30 these products.



The formulation of the present invention can be used in hair care products as shampoos, conditioners, relaxing, highlightning, hair-styling gel, fixing gel, spray mousses, hair styling creams, mousses, hair coloring products (temporary or permanent) and in skin care products such as shaving creams, after-shave lotions, sunscreens, creams, ointments, liquid soaps, bar soaps.

The pharmaceutical formulations are chosen from the group comprising spray, ointment, gel, among others. In one preferred embodiment, the present invention relates to a spray formulation.

The cleaning compositions of the present invention are chosen from the group comprising disinfectants, detergents, heavy duty cleaning products, etc.

In a preferred embodiment, the present invention provides products, detailed in the following tables, comprising the essential oils described above having biofilm removing and antibacterial properties.

These and other objects of the invention will be better understood from the detailed description of the invention.

### **Detailed Description of the Invention**

The following examples are illustrative of the present invention and are by no means intended to limit the scope of the present invention.

Several variants of the present invention can be prepared from the teaching of the present invention, mainly depending on the intending formulation action. For oral hygiene products, the inventors of the present invention suggest a preferred formulation containing the essential oil from a plant from genus Protium, a plant from genus Guatteria and a plant from genus Cyperus. For formulations related to personal hygiene products, a preferred formulation containing the essential oil from a plant from genus Protium and a plant from genus Guatteria. The prophylactic formulation for treatment of skin disorders comprises, besides essential oils from plants from genus Protium and Guatteria, essential oils from plants from genus Aniba. For general cleaning products, preferred formulations are made with essential oils from a plant from genus Guatteria and a plant from genus Aniba.

The present invention provides a formulation comprising:

- a) at least one essential oil selected from the group which comprises the *Protium*, *Guatteria*, *Cyperus* genus and mixtures thereof;
- b) a suitable vehicle.

5 In another embodiment, the formulation comprises an essential oil of a plant selected from the group consisting of *Aniba* genus.

#### Essential Oils

The essential oils referred herein are oils with antimicrobial, wound healing, biofilm removing and/or fixative activity. Useful plants to be used in the present invention include, but are not limited to:

- plants of *Protium* genus, specially *Protium heptaphyllum* March; (with wound healing properties);
- plants of *Guatteria* genus, specially *Guatteria citriodora* Ducke; (with antimicrobial properties);
- 15 - plants of *Cyperus* genus, specially *Cyperus rotundus* Linn; (with biofilm removing properties); and
- plants of *Aniba* genus, specially *Aniba roseodora* Ducke; (with fixative proprieties)

The essential oils of the abovementioned plants can be obtained from any part of the plants including, but not limited to stem, flowers, fruits, leafs, branches, seeds and roots. The extraction can be done through usual state of art methods. The essential oils can be present in a range comprising from 0.01% w/w to 3.0% w/w, depending on the product used. The most preferred ranges according to the present invention are:

- 25 1 – Phytotherapeutic dental gel, comprising from 0.02% w/w to 0.1% w/w.
- 2- Phytotherapeutic dental cream with Fluor, comprising from 0.02% w/w to 0.1% w/w.
- 3 – Phytotherapeutic cream with calcium hydroxy, comprising 0.5% w/w to 1.0% w/w.
- 30 4 – Phytotherapeutic prophylactic cream with Fluor, comprising 0.02% w/w to 0.1% w/w.



5 – Phytotherapeutic oral rinse, comprising from 0.02% w/w to 0.1% w/w.

6 – Phytotherapeutic glycerin soap, antibacterial and wound healing, comprising from 0.01% w/w to 0.02% w/w.

7- Phytotherapeutic antibacterial and wound healing liquid soap, comprising  
5 from 0.2% w/w to 0.3% w/w.

8- Liquid disinfectant with Amazon oils comprising at least two essential oils, wherein the first oil comprises from 0.1% w/w to 0.3% w/w and the second oil comprises from 1.5% w/w to 3.0% w/w.

9- Prophylactic antimicrobial and wound healing spray, comprising from  
10 0.03% w/w to 0.4% w/w.

10- Toothbrushes, dental prosthesis and orthodontic retainers disinfectant, comprising from 0.02% w/w to 0.1% w/w

Specially, the oil from *Cyperus rotundus* Linn is preferably used in the formulation of products for biofilm removal. In the same way, the oils from  
15 *Guatteria citriodora* Ducke and *Protium heptaphyllum* March presents anti-septic and antimicrobial activity against oral bacteria.

The present invention provides several other compounds described in the classes below. A person skilled in the art will understand that any compound belonging to the state of the art and to the following classes is useful in the  
20 preparation of formulations according to this invention. The following compounds are examples of suitable compounds and are, by no means, intended to limit the scope of the present invention.

#### Surfactant Agent

25 Preferred surfactants for the present invention are chosen from the groups comprising anionic surfactants, nonionic surfactants, cationic surfactants and amphoteric/zwitterionic surfactants.

Suitable anionic surfactants that can be used in the present invention include, but are not limited to, alkaline and/or alkaline earth metals salts of fatty  
30 acids, alkyl sulfates ammonium salts, ethoxylated alkyl sulfates, alkyl sulfonates, akyaryl sulfonates, alkyl sulfosuccinate, alkyl ether sulfosuccinate,

alkyl sulfosuccinamate, alkyl amide sulfosuccinate, alkyl carboxilate, alkyl succinate, ether alkyl carboxilate. The alkyl or acyl groups present have a carbonic chain from about 12 to about 20 carbon atoms. The aryl group has a phenyl or benzyl group.

5           . Suitable non-ionic surfactants that can be used in the present invention include, but are not limited to, ethoxylated alcohol with linear alcohol groups of natural origin with from 12 to 18 carbon atoms and an average of 2 to 8 EO by mol of alcohol.

10           The fatty alcohols with more than 12 EO can also be used. Alkyl glycosides can be added if it satisfies the general formula  $RO(G)_x$ , wherein R is a primary or methyl branched linear group, particularly 2-methyl branched. This aliphatic group contains from 8 to 22 carbon atoms, more preferably from 12 to 18 carbon atoms. G can be an glycosidic unit containing from 5 to 6 carbon atoms, preferably glucose. The oligomerization degree x, which defines the  
15           distribution of monoglycosides and oligoglycosides is a number between 1 and 10.

          Non-ionic surfactants like amine oxide such as N-cocoalkyl-N,N-dimethylamine oxide and N-tallow alkyl-N,N-dihydroxyethylamine oxide and fatty acids alkanolamides are also suitable to be used at the present invention.

20           Amphoteric/zwitterionic surfactants can be extensively described as secondary and tertiary amines derivatives or quaternary ammonium derivatives, quaternary phosphonium derivatives or tertiary compounds of sulfonium. The cationic atom of the quaternary compound can be part of a heterocyclic ring. All these compounds have at least one aliphatic group, linear or branched, having  
25           from about 3 to about 18 carbon atoms and at least one aliphatic substituent having an anionic group, water-soluble, i.e. carboxy, sulfonate, sulfate, phosphate or phosphono. Examples of suitable zwitterionic surfactants that can be used at the present invention are described herein below.

30           Amphocarboxylates, alkyl betaines, amidoalkyl betaines, amidoalkyl sultaines, amphophosphates and phosphobetaines.



The surfactant agent can be present in a range comprising from 0.1% w/w to 25% w/w depending upon the intended product. The most common ranges are listed here:

1- Phytotherapeutic dental gel, comprising from 0.8% w/w to 1.5% w/w;

5 2- Phytotherapeutic cream with Fluor, comprising from 0.8% w/w to 1.5 % w/w;

3- Phytotherapeutic and prophylactic cream with Fluor, comprising 0.8% w/w to 1.2% w/w;

4- Phytotherapeutic oral rinse, comprising from 0.1% w/w to 0.7% w/w;

10 5- Phytotherapeutic antibacterial and wound healing glycerin soap, comprising from 1.5% w/w to 2.5% w/w;

6- Phytotherapeutic antibacterial and wound healing liquid soap, comprising two surfactant agents, one from 0.8% w/w to 1.2% w/w and the other from 18% w/w to 25% w/w;

15 7- Disinfectant with Amazon oils, comprising from 2.0% w/w to 3.5% w/w

8- Prophylactic antimicrobial and wound healing spray, comprising from 0.1% w/w to 0.4% w/w;

9- Disinfectant for toothbrushes, dental prosthesis and orthodontic retainers, comprising from 0.1% w/w to 0.5% w/w;

20

#### Thickening Agent

Suitable thickening agents according to the present invention include, without limitation, carboxylic acid/carboxylate copolymers such as hydrophobically-modified cross-linked copolymers of carboxylic acid and alkyl carboxylate.

25

Additional viscosity modifiers useful herein are vinyl polymers such as cross linked acrylic acid polymers, such as methyl cellulose, ethyl cellulose, hydroxyethyl cellulose, hydroxypropyl methyl cellulose, nitro cellulose, sodium cellulose sulfate, sodium carboxymethyl cellulose, crystalline cellulose, cellulose powder, polyvinylpyrrolidone, polyvinyl alcohol, guar gum, hydroxypropyl guar gum, xanthan gum, arabic gum, tragacanth gum, carob gum, karaya gum,

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carrageenan, pectin, agar, starch (rice, corn, potato, wheat), algae colloids (algae extract), starch-based polymers such as carboxymethyl starch, methylhydroxypropyl starch, alginic acid-based polymers such as propylene glycol esters, sodium polyacrylate, polyethylacrylate, polyacrylamide, polyethyleneimine, and inorganic water soluble material such as bentonite, aluminum magnesium silicate, laponite, hectonite, and anhydrous silicic acid.

The thickening agent can be present in a range comprising from 0.3% w/w to 52% w/w depending upon the intended product. The most common ranges are listed here:

1 – Phytotherapeutic dental gel, comprising from 0.3% w/w to 0.7% w/w.

2- Phytotherapeutic dental cream with Fluor, comprising from 0.3% w/w to 0.8% w/w.

3 – Phytotherapeutic and prophylactic cream with Fluor, comprising from 48% w/w to 52% w/w.

4 – Phytotherapeutic antibacterial and wound healing glycerin soap, comprising from 1.0% w/w to 2.0% w/w.

5- Phytotherapeutic antibacterial and wound healing liquid soap, comprising from 0.5% w/w to 3.5% w/w.

#### Humectant agent

Useful humectant agents of the present invention include, without limitation:

a) water-soluble liquid polyols as for example glycerin, propylene glycol, hexylene glycol, buylene glycol, and dipropylene glycol;

b) polyethylene glycol of the formula:



wherein R is an alkyl group with 2 or 3 carbon atoms and n is 2 to 10;

c) methyl glycosides polyethylene glycol ethers;

d) urea



The humectant agent can be present in a range that comprises from 0.5% w/w to 99% w/w, depending upon the intended product. The most common ranges are listed here:

1- Phytotherapeutic dental gel comprising from 20% w/w to 25% w/w;

5 2- Phytotherapeutic dental cream with Fluor comprising from 20% w/w to 25% w/w

3- Phytotherapeutic and prophylactic cream with Fluor comprising two humectant agents in which one of them comprising from 4.0% w/w to 6.0% w/w and the other from 14% w/w to 17% w/w.

10 4- Phytotherapeutic oral rinse comprising from 20% w/w to 25% w/w

5- Phytotherapeutic antibacterial and wound healing glycerin soap, comprising from 1.0% w/w to 2.0% w/w.

6- Phytotherapeutic antibacterial and wound healing liquid soap, comprising 0.5% w/w to 1.5% w/w.

15 7- Prophylactic antimicrobial and wound healing spray, comprising from 97% w/w to 99% w/w.

8- Disinfectant for toothbrushes, dental prosthesis and orthodontic retainers, comprising from 20% w/w to 25% w/w.

20 Abrasive agents

The abrasive agent used in the present invention is chosen from the group that comprises, without limitation, pomme stone, alumina, silica, alkaline and alkaline earth metal phosphate, such as ortho- meta- and pyrophosphates, carbonates and/or silicates salts such as calcium carbonate, magnesium carbonate, calcium pyrophosphate, calcium phosphate, alkaline metals metaphosphates, magnesium phosphates, magnesium silicate, calcium meta silicate.

In a preferred embodiment the present invention uses calcium pyrophosphate, calcium carbonate, pomme stone and/or dehydrated calcium phosphate.

30

The abrasive agent can be present in a range that comprises from 17% w/w to 50% w/w, depending upon the intended product. The most common ranges are listed here:

1- Phytotherapeutic dental gel, comprising from 45% w/w to 50% w/w.

5 2- Phytotherapeutic cream with Fluor, comprising from 42% w/w to 47% w/w.

3- Phytotherapeutic and prophylactic cream with Fluor comprising from 17% w/w to 18% w/w.

10 Antimicrobial agent

The antimicrobial agent used in the present invention is chosen from the group that comprises, without limitation, antimicrobial agents such as tertiary amines with a fatty alkyl group of 12 to 18 carbon atoms and optionally, two (poly)oxyethylenes attached to the nitrogen, quaternary ammonium, compounds  
15 such as benzethonium chloride or quaternary ammonium halides such as dodecyl-, tetradecyl- and hexadecyltrimethyl ammonium halides. Other compounds such as methyl, ethyl, buthyl, propyl and isobutyl parabens can also be used.

The antimicrobial agents used in the present invention are also chosen  
20 from the group that comprises plant extracts such as essential oils. Suitable plants are selected from the group that comprises plants from the genus Guatteria and/or Protium and/or Cyperus, more specifically Guatteria citriodora Ducke, Protium heptaphyllum March and Cyperus rotundus Linn.

The antimicrobial agent can be present in a range that comprises from  
25 0.01% w/w to 92% w/w, depending upon the intended product. The most common ranges are listed here:

1- Phytotherapeutic dental gel comprising from 0.02% w/w to 0.5% w/w.

2- Phytotherapeutic dental cream with Fluor comprising from 0.02% w/w to 0.1% w/w.



3- Prophylactic phytotherapeutic paste with calcium hydroxide comprising two antimicrobial agents, one from 0.5% w/w to 1.0% w/w and the other from 88% w/w to 92% w/w.

5 4- Phytotherapeutic and prophylactic cream with Fluor comprising from 0.01% w/w to 0.3% w/w.

5- Phytotherapeutic oral rinse that comprises from 0.02% w/w to 0.1% w/w.

6- Phytotherapeutic antibacterial and wound healing glycerin soap, comprising from 0.01% w/w to 0.02% w/w.

10 7- Phytotherapeutic antibacterial and wound healing liquid soap, comprising from 0.04% w/w to 0.4% w/w.

8- Disinfectant with Amazon oils, comprising from 2.0% w/w to 3.0% w/w.

9- Prophylactic antimicrobial and wound healing spray, comprising from 0.02% w/w to 0.3% w/w;

15 10- Disinfectant for toothbrushes, dental prosthesis and orthodontic retainers, comprising from 0.02% w/w to 0.1% w/w;

#### Biofilm removing agent

20 The biofilm removing agent used in the present invention is chosen from the group that comprises the plant extracts such as essentials oils. The selected plant belongs to the genus *Cyperus*, specifically *Cyperus rotundus* Linn.

The biofilm removing agent is preferably present in a range that comprises from 0.05% w/w to 1.3% w/w, depending upon the intended product. The most common ranges are listed here:

25 1- Phytotherapeutic dental gel comprising from 0.05% w/w to 0.15% w/w;

2- Phytotherapeutic dental cream with Fluor comprising from 0.05% w/w to 0.15% w/w;

3- Phytotherapeutic paste from calcium hydroxide comprising from 0.8% w/w to 1.3% w/w;

30 4- Phytotherapeutic paste with Fluor comprising from 0.05% w/w to 0.15% w/w;

5- Phytotherapeutic oral rinse comprising from 0.05% w/w to 0.15% w/w;  
and

6- Disinfectant for toothbrushes, dental prosthesis and orthodontic retainers comprising from 0.05% w/w to 0.15% w/w.

5

#### Antimicrobial fixer agent

The antimicrobial fixer agent used in the present invention is chosen from the group that comprises plant extracts such as essential oils. The plant selected belongs to the genus *Aniba*, specifically *Aniba roseodora* Ducke.

10 The antimicrobial fixer agent is preferentially in a range that comprises from 0.1% w/w a 0.4% w/w, depending upon the intended product. The most common ranges are listed here:

1- Disinfectant with Amazon oils comprising from 0.1% w/w to 0.3% w/w;  
and

15 2- Prophylactic antimicrobial and wound healing spray comprising from 0.2% w/w to 0.4% w/w.

#### Fluor based compounds

20 The Fluor based compound is chosen from the group comprising the chemical compounds that are fluoride sources such as monofluorophosphates salts such as sodium monofluorophosphates, lithium monofluorophosphate, potassium monofluorophosphate, ammonium monofluorophosphate or mixtures thereof. Other suitable compounds include fluorides such as sodium and potassium fluorides.

25 The Fluor based compounds can be present in a range that comprises from 900 to 1600 ppm, depending upon the intended product. The most common ranges are listed here:

1- Phytotherapeutic dental gel comprising from 900 ppm to 1100 ppm of sodium monofluorophosphate;

30 2- Phytotherapeutic dental cream with Fluor comprising from 1.400 ppm to 1600 ppm of sodium monofluorophosphate;



3- Phytotherapeutic and prophylactic cream with Fluor comprising from 1.400 ppm to 1600 ppm of sodium monofluorophosphate.

#### Optional components

5 The compositions of the present invention can comprise also optional components as flavouring agents, enzymes, fragrance, pigments, colorants, preservatives, pH regulators, propelants, antioxidants (BHT, BHA), chelants (EDTA, EGTA, among others), bactericides, fungicides, antiviral agents, opacifying agents, bleach agents, conditioning polymers, silicone, among  
10 others.

Below are some examples of applications of these formulations. These examples do not limit the scope of the invention, but only illustrates some of the several forms of use. Further, the preparation methods of all formulations described here comprises the general used process described in the state of  
15 the art.

#### Example 1. Essential oils

The extraction of vegetal volatiles oils from the species: tiririca (*Cyperus rotundus* Linn), breu-branco (*Protium heptaphyllum* March), pau rosa (*Aniba roseodora* Ducke), and laranjinha (*Guatteria citriodora* Ducke) is described  
20 below.

The crushed and dried botanic material is placed in a 1 to 5L volumetric flask according to the ratio botanic material:water 1:10. The essential oil extraction is performed by steam stripping and the difference in density allows  
25 the recovery of the plant extract through hydrodistillation, in the Clevenger system for 2 to 3 hours, keeping the temperature of 100°C.

After that, the oils are dried using anhydrous Na<sub>2</sub>SO<sub>4</sub>. The essential oil is then stored in amber flask and kept refrigerated for conservation to avoid loss of  
30 constituents.

3- Phytotherapeutic and prophylactic cream with Fluor comprising from 1.400 ppm to 1600 ppm of sodium monofluorophosphate.

#### Optional components

5 The compositions of the present invention can comprise also optional components as flavouring agents, enzymes, fragrance, pigments, colorants, preservatives, pH regulators, propellants, antioxidants (BHT, BHA), chelants (EDTA, EGTA, among others), bactericides, fungicides, antiviral agents, opacifying agents, bleach agents, conditioning polymers, silicone, among  
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25 the recovery of the plant extract through hydrodistillation, in the Clevenger system for 2 to 3 hours, keeping the temperature of 100°C.

After that, the oils are dried using anhydrous Na<sub>2</sub>SO<sub>4</sub>. The essential oil is then stored in amber flask and kept refrigerated for conservation to avoid loss of  
30 constituents.



**Example 2. Formulation for dental gel**

In a preferred embodiment of the present invention, the formulation for a dental gel with essential oils comprises the compounds according to the following Tables 1 and 2.

5

Table 1 – Dental gel formulation

**Phytotherapeutic dental gel with Fluor**

<i>Cyperus rotundus</i> Linn oil	0.1mL
<i>Guatteria citriodora</i> Ducke oil	0.02mL
<i>Protium heptaphyllum</i> March oil	0.05mL
Fluoride (MFP-Na <sub>2</sub> )	1000 ppm
Dental gel vehicle	To 100 g

Table 2 – Formulation for the dental gel vehicle

Glycerin	22 g
Carbopol 934	500mg
Distilled water	25.19mL
Tetrasodium pyrophosphate	250 mg
Sodium saccharin	200 mg
Sodium benzoate	500 mg
Sodium hydroxide solution 50%	0.4mL
Calcium phosphate dihydrated	48.76 g
Lauryl sodium sulphate	1.2 g
Flavouring	1 mL

10 **Example 3. Dental cream formulation**

In a special embodiment of the present invention, the dental cream formulation with essential oils comprises the compounds according to the following Tables 3 and 4.

15

Table 3 – Dental cream formulation

**Phytotherapeutic dental cream with Fluor**

<i>Cyperus rotundus</i> Linn. oil	0.1mL
<i>Guatteria citriodora</i> Ducke oil	0.02 mL
<i>Protium heptaphyllum</i> March oil	0.05mL
Fluoride (in MFP-Na <sub>2</sub> form)	1500 ppm
Dental cream vehicle	To 100 g

Table 4 – Formulation for dental cream vehicle

**Vehicle to dental creams**

Calcium pyrophosphate	45 g
Sorbitol solution 70%	20 mL
Lauryl sodium sulphate	1.2 g
Carboxymethylcellulose	600 mg
Sodium saccharin	100 mg
Flavouring (menthol oil)	0.75 mL
Water	32.35 mL

**Example 4. Dentistry paste Formulation**

It is indicated to dentistry use, specifically in the endodontics field (root canal treatment) as calcium hydroxide paste with antimicrobial and antiseptic action from the *Guatteria citriodora* Ducke oil, wound healing action from the *Protium heptaphyllum* March oil and biofilm removing action from *Cyperus rotundus* Linn oil being used as intracanal drug in teeth with exudates and lateral and apical root reabsorptions. These oils were scientifically tested and the properties confirmed. The product aims the removal of intracanal biofilm chemically formed in the human teeth as well as present wound healing, antimicrobial and antiseptic activities against endodontic bacteria. The formulation presented below comprises a ratio of 10mL liquid to each 12g powder.

In a special embodiment of the present invention, the dentistry paste formulation with the essential oils comprises the compounds according to the following Tables 5 and 6.

Table 5 – Dentistry paste powder formulation

Calcium hydroxide	90%
Bismute carbonate	10%

Table 6 – Dentistry phytotherapeutic paste liquid formulation

<i>Cyperus rotundus</i> Linn oil	0.1mL
<i>Guatteria citriodora</i> Ducke oil	0.05mL
<i>Protium heptaphyllum</i> March oil	0.05mL
Olive oil	To 10 g

**Example 5. Prophylatic paste with Fluor formulation**

The prophylatic paste with Fluor presents antimicrobial and biofilm removing action since it uses the essential oil from *Cyperus rotundus* Linn as a remover of the biofilm formed by *Streptococcus mutans*, the main bacteria that causes dental caries in humans, and the essential oil from *Guatteria citriodora* Ducke that has action as oral antimicrobial and anti-septic and the essential oil from *Protium heptaphyllum* March that has wound healing action in oral cavity. These oils were scientifically tested and the biofilm removing, antimicrobial and wound healing actions were confirmed. It allows the interruption of the carious process making easy the process of cleaning, and removing detritus and spots as well as prevents the dental caries formation, wounds in the oral cavity and periodontal diseases.

In a special embodiment of the present invention, the formulation of the prophylatic paste with the essential oils comprises the compounds according to the following Tables 7, 8 and 9.

Table 7 – Formulation of prophylatic phytotherapeutic paste with Fluor

<i>Cyperus rotundus</i> Linn oil	0.1mL
<i>Guatteria citriodora</i> Ducke oil	0.02mL
<i>Protium heptaphyllum</i> March oil	0.05mL
Fluoride (in MFP-Na <sub>2</sub> form)	1500 ppm
Prophylatic base paste	To 100 g

Tabela 8 – Formulation of prophylatic base paste

Calcium carbonate	35g
Glycerin	30g
Nipagin	0.1%
Sodium saccharin	0.2%
Menthol	0.3%
Mint essence	s.q.
Lauryl sodium sulphate (powder)	1.0%
Natrosol gel 2.0%	To 100 g
Pomme stone	35g
Distilled water	To 30mL



Table 9 – Formulation of natrosol gel

Natrosol	2%
Nipagin	0.1%
Propylene glycol	5%
EDTA	0.1%
Water	To 100 mL
Phenonip	0.05%

**Example 6. Mouth rinse formulation**

5           The phytotherapeutic mouth rinse with antimicrobial, anti-septic, wound healing and biofilm removing action uses the essential oil of *Cyperus rotundus* Linn as remover for biofilm caused by *Streptococcus mutans*, the main bacteria that causes the dental caries in humans, as well as the essential oil of *Guatteria citriodora* Ducke as oral antimicrobial and anti-septic and the essential oil of

10 *Protium heptaphyllum* March that presents antimicrobial and wound healing action in the oral cavity. These oils were scientifically tested and the antimicrobial, wound healing and biofilm removing properties confirmed as well as the prevention of dental caries formation.

          In a special embodiment of the present invention, the formulation of

15 mouth rinse with essential oils comprises the compounds according to the following Table 10.

Table 10 – Mouth rinse formulation

20	Cetylpyridinium chloride	100mg
	Citric acid	100mg
	<i>Cyperus rotundus</i> Linn oil	0.1mL
	<i>Guatteria citriodora</i> Ducke oil	0.02mL
	<i>Protium heptaphyllum</i> March oil	0.05mL
	Polysorbate 60	0.3mL
	Ethanol 95%	10mL
25	Sorbitol solution 70%	20mL
	Water	To 100mL

**Example 7. Formulation for glycerined soap**

The phytotherapeutic glycerinated soap with bactericidal and wound healing properties uses essential oil from *Guatteria citriodora* Ducke with antimicrobial and antiseptic properties and the oil from *Protium heptaphyllum* March with wound healing action. If used in a continuous form, it helps in the cleaning, and wound healing process and also prevents diseases produced by bacteria found in the skin.

In a special embodiment of the present invention, the formulation for glycerined soap with essential oils comprises the compounds according to the following Table 11.

Table 11 – Antimicrobial and wound healing glycerined soap.

Cocconut fat (babaçu cocconut oil)	4.5 Kg
Castor oil	1 Kg
Odourless and clarified industrial fat matter (1/2 stearic acid known as double or triple action stearin).	½ Kg
Soda 99 (or 2 kg liquid soda )	1 Kg
Álcohol without additives	4 L
Water	2 L
Refined sugar	1 kg
Tetrasodic EDTA	12 g
BHT	12 g
Glycerin	200 g
Propylene glycol	200 g
Lauryl sodium sulphate	300 mL
Synthetic amide (amide 90)	200 mL
<i>Guatteria citriodora</i> Ducke oil	2.5 mL
<i>Protium heptaphyllum</i> March oil	2.5 mL

**Example 8. Formulation for liquid soap**

The liquid phytotherapeutic soap with antimicrobial and wound healing properties is recommended as prophylactic in the hands and wounds cleaning.

In a special embodiment of the present invention, the liquid soap formulation with essential oils comprises the compounds according to the following Table 12.

Table 12 – Antimicrobial and wound healing phytotherapeutic liquid soap

<b>Phase A</b>		
	Lauryl ether sodium sulphate	200 mL
	Zonen MI	0.5 mL
	Propylene glycol	10 mL
	Sunquart ® SC – 50	10 mL
	Cocconut diethanolamye	30 mL
	Glucamate DOE	7 g
	Citric acid	10 mL
	Filtered water	730 mL
	<i>Guatteria citriodora</i> Ducke oil	2.5 mL
	<i>Protium heptaphyllum</i> March oil	2.5 mL
5	<b>Phase B</b>	
	Amphoteric betaines	30 mL

**Example 9. Formulation for liquid disinfectant**

The liquid disinfectant based on oils with bactericidal and fixing properties uses essential oils of *Guatteria citriodora* Ducke as antimicrobial and from *Aniba roseodora* Ducke as fixing of the disinfectant effect. It helps in the cleaning process preventing the occurrence of bacterial diseases in hospitals, clinics and laboratories. It is not toxic to human skin when used in continuous form.

15 Table 13 –Oil based disinfectant

	<i>Guatteria citriodora</i> Ducke oil	2.5%
	Ethoxilated nonylphenol with 10EO	3.0%
	Butyldiglycol	2.0%
	Alkyl dimethyl benzyl ammonium chloride (50%)	2.5%
	<i>Aniba roseodora</i> Ducke oil	0.2%
	Colouring indicator	qs
	Filtered water	To 100

**Example 10. Formulation for prophylatic spray**

In this embodiment, the purpose of the formulation is to fix in the skin, through the constituents of *Aniba roseodora* Ducke oil in a fast and practical way, the antimicrobial properties of the *Guatteria citriodora* Ducke oil and the wound healing property of the *Protium heptaphyllum* March oil. The final product



of this association in the antimicrobial and wound healing spray form is directed to bandages in skin wounds.

In a special embodiment of the present invention, the formulation for prophylactic spray with the essential oils comprises the compounds according to  
5 the following Table 14.

Table 14 – Prophylactic antimicrobial and wound healing spray

Glycerin	30mL
Ethanol	0.3%
<i>Aniba roseodora</i> Ducke oil	0.1mL
<i>Guatteria citriodora</i> Ducke oil	0.02mL
<i>Protium heptaphyllum</i> March oil	0.05mL
Saline solution	To 1mL

10

**Example 11. Disinfectant of toothbrushes, dental prosthesis and orthodontic retainers**

This invention purposes to disinfect toothbrushes and dental prosthesis through the components of *Cyperus rotundus* Linn oil with biofilm remover  
15 property by the removal of the biofilm caused by *Streptococcus mutans*, the main bacteria that causes the dental caries in humans and the *Guatteria citriodora* Ducke oil with antimicrobial and antiseptic property against oral bacteria and the *Protium heptaphyllum* March oil that presents antimicrobial  
20 action. The final product of this association in the form of a disinfectant is directed to the cleaning of brushes and dental prosthesis and orthodontic retainers, in the gingival disease prevention and the dental caries formation.

In a special embodiment of the present invention, the formulation for disinfectant of brushes, dental prosthesis and orthodontic retainers comprising  
25 the compounds according to the following Table 15.

Table 15 – Disinfectant of toothbrushes, dental prosthesis and orthodontic retainers

Cetylpyridinium chloride	100 mg
Citric acid	100 mg

	<i>Cyperus rotundus</i> Linn oil	0.1 mL
	<i>Guatteria citriodora</i> Ducke oil	0.02 mL
	<i>Protium heptaphyllum</i> March oil	0.05 mL
	Polysorbate 60	0.3 mL
5	Ethanol 95%	10 mL
	Sorbitol solution 70%	20 mL
	Hydrogen peroxide 10 vol	To 100 mL

The skilled in the art will understand the teachings of the present  
10 invention and know that small changes in the embodiments herein presented  
must be understood as being within the spirit of the invention and within the  
scope of the following claims.

### Claims

ACTIVE FORMULATIONS BASED ON PLANT EXTRACTS, PHYTICOSMETIC AND/OR  
PHYTOTHERAPEUTIC FORMULATIONS COMPRISING THE SAME AND METHOD FOR  
PREPARATION THEREOF

5

1. Active Formulation based on plant extracts characterized by comprising:
  - a) at least one essential oil of plants selected from the group that comprises the genus *Protium*, *Guatteria*, *Cyperus* and the mixture thereof; and
  - b) a suitable vehicle.

10

2. Formulation, according to claim 1, characterized by the fact that the plants are *Protium heptaphyllum* March, *Guatteria citriodora* Ducke and/or *Cyperus rotundus* Linn.

15

3. Formulation, according to claim 1, characterized by the fact that it additionally comprises at least one essential oil of plants selected from the genus *Aniba*.

20

4. Formulation, according to claim 3, characterized by the fact that the plant is *Aniba roseodora* Ducke.

5. Formulation, according to claim 1, characterized by the fact that the essential oils have antimicrobial and/or biofilm removing activity.

25

6. Formulation, according to claim 1, characterized by the fact that the essential oils are obtained from the stem, flowers, fruits, leaves, branches, seeds and roots.

30

7. Formulation, according to claim 3, characterized by the fact that the essential oils have antimicrobial fixing activity.



8. Formulation, according to claim 3, characterized by the fact that the essential oils be obtained from the stem, flowers, fruits, leaves, branches, seeds and roots.

5

9. Phytocosmetic and/or phytotherapeutic formulation characterized by the fact that it comprises at least one essential oil of the plants selected from the group that comprises the genus *Protium*, *Guatteria*, *Cyperus* and combinations thereof and is presented as phytotherapeutic dental gel, phytotherapeutic dental cream, phytotherapeutic paste with calcium hydroxide, prophylactic phytotherapeutic paste with Fluor, phytotherapeutic oral rinse, phytotherapeutic glycerinated soap, phytotherapeutic liquid soap, liquid disinfectant, prophylactic spray, disinfectant for toothbrushes and/or dental prosthesis and/or removable orthodontic retainers.

10

15

10. Phytocosmetic and/or phytotherapeutic formulation, according to claim 9, characterized by the fact that it is a phytotherapeutic dental gel and comprises:

- a) At least one essential oil of plants selected from the group that comprises the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof in the range from 0.02% w/w to 0.1% w/w;
- b) at least one compound selected from the group of surfactant agents in the range of from 0.8% w/w to 1.5% w/w;
- c) at least one compound selected from the group of thickening agents in the range from 0.3% w/w to 0.7% w/w.
- d) at least one compound selected from the group of humectant agents in the range from 20% w/w to 25% w/w;
- e) at least one compound selected from the group of abrasive agents in the range from 45% w/w to 50% w/w;
- f) at least one compound selected from the group of antimicrobial agents in the range from 0.02% w/w to 0.5% w/w;

20

25

30

- g) at least one compound selected from the group of biofilm removing agents in the range from 0.05% w/w to 0.15% w/w; and
- h) at least one compound selected from the group of fluor based compounds in the range from 900 ppm to 1100 ppm.

5

11. Phytocosmetic and/or phytotherapeutic formulation, according to claim 9, characterized by the fact that it is a phytotherapeutic dental cream and comprises:

10

- a) at least one essential oil of plants selected from the group that comprises the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof in the range from 0.02% w/w to 0.1% w/w;
- b) at least one compound selected from the group of surfactant agents in the range from 0.8% w/w to 1.5% w/w;
- c) at least one compound selected from the group of thickening agents in the range from 0.3% w/w to 0.8% w/w.
- d) at least one compound selected from the group of humectant agents in the range from 20% w/w to 25% w/w;
- e) at least one compound selected from the group of abrasive agents in the range from 42% w/w to 47% w/w;
- f) at least one compound selected from the group of antimicrobial agents in the range from 0.02% w/w to 0.1% w/w;
- g) at least one compound selected from the group of biofilm removing agents in the range from 0.05% w/w to 0.15% w/w; and
- h) at least one compound selected from the group of fluor based compounds in the range from 1400 ppm to 1600 ppm.

15

20

25

12. Phytocosmetic and/or phytotherapeutic formulation, according to claim 9, characterized by the fact that it is a calcium hydroxide phytotherapeutic paste and comprises:

- a) at least one essential oil of plants selected from the group that comprises the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof in the range from 0.5% w/w to 1.0% w/w;
- b) at least one compound selected from the group of antimicrobial agents in the range from 0.5% w/w to 92% w/w; and
- c) at least one compound selected from the group of biofilm removing agents in the range from 0.8% w/w to 1.3% w/w;

13. Phytocosmetic and/or phytotherapeutic formulation, according to claim 9, characterized by the fact that it is a prophylactic phytotherapeutic paste with Fluor and comprises:

- a) at least one essential oil of plants selected from the group that comprises the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof in the range from 0.02% w/w to 0.1% w/w;
- b) at least one compound selected from the group of surfactant agents in the range of 0.8% w/w to 1.2% w/w;
- c) at least one compound selected from the group of thickening agents in the range from 48% w/w to 52% w/w.
- d) at least one compound selected from the group of humectant agents in the range from 4.0% w/w to 17% w/w;
- e) at least one compound selected from the group of abrasive agents in the range from 17% w/w to 18% w/w;
- f) at least one compound selected from the group of antimicrobial agents in the range from 0.01% w/w to 0.3% w/w;
- g) at least one compound selected from the group of biofilm removing agents in the range from 0.05% w/w to 0.15% w/w; and
- h) at least one compound selected from the group of fluor based compounds in the range from 1400 ppm to 1600 ppm.

14. Phytocosmetic and/or phytotherapeutic formulation, according to claim 9, characterized by the fact that it is a phytotherapeutic oral rinse and comprises:



- 5
- a) at least one essential oil of plants selected from the group that comprises the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof in the range from 0.02% w/w to 0.1% w/w;
  - b) at least one compound selected from the group of surfactant agents in the range from 0.1% w/w to 0.7% w/w;
  - c) at least one compound selected from the group of humectant agents in the range from 20% w/w to 25% w/w;
  - d) at least one compound selected from the group of antimicrobial agents in the range from 0.02% w/w to 0.1% w/w; and
  - 10 e) at least one compound selected from the group of biofilm removing agents in the range from 0.05% w/w to 0.15% w/w;

15 15. Phytocosmetic and/or phytotherapeutic formulation, according to claim 9, characterized by the fact that it is a phytotherapeutic glycerined soap and comprises:

- a) at least one essential oil of plants selected from the group that comprises the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof in the range from 0.01% w/w to 0.02% w/w;
- 20 b) at least one compound selected from the group of surfactant agents in the range from 1.5% w/w to 2.5% w/w;
- c) at least one compound selected from the group of thickening agents in the range from 1.0% w/w to 2.0% w/w.
- d) at least one compound selected from the group of humectant agents in the range from 1.0% w/w to 2.0% w/w; and
- 25 e) at least one compound selected from the group of antimicrobial agents in the range from 0.01% w/w to 0.02% w/w;

16. Phytocosmetic and/or phytotherapeutic formulation, according to claim 9, characterized by the fact that it is a liquid phytotherapeutic soap and comprises:

- 5
- a) at least one essential oil of plants selected from the group that comprises the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof in the range from 0.2% w/w to 0.3% w/w;
  - b) at least one compound selected from the group of surfactant agents in the range from 0.8% w/w to 25% w/w;
  - c) at least one compound selected from the group of thickening agents in the range from 0.5% w/w to 3.5% w/w.
  - d) at least one compound selected from the group of humectant agents in the range from 0.5% w/w to 1.5% w/w; and
  - 10 e) at least one compound selected from the group of antimicrobial agents in the range from 0.04% w/w to 0.4% w/w;

17. Phytocosmetic and/or phytotherapeutic formulation, according to claim 9, characterized by the fact that it is a liquid disinfectant and comprises:

- 15
- a) at least one essential oil of plants selected from the group that comprises the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof in the range from 0.1% w/w to 3.0% w/w;
  - b) at least one compound selected from the group of surfactant agents in the range from 2.0% w/w to 3.5% w/w;
  - 20 c) at least one compound selected from the group of antimicrobial agents in the range from 2.0% w/w to 3.0% w/w; and
  - d) at least one compound selected from the group of antimicrobial fixer agents in the range from 0.1% w/w to 0.3% w/w;

25 18. Phytocosmetic and/or phytotherapeutic formulation, according to claim 9, characterized by the fact that it is a prophylactic spray and comprises:

- a) at least one essential oil of plants selected from the group that comprises the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof in the range from 0.03% w/w to 0.4% w/w;
- 30 b) at least one compound selected from the group of surfactant agents in the range from 0.1% w/w to 0.4% w/w;

- c) at least one compound selected from the group of humectant agents in the range from 97% w/w to 99% w/w; and
- d) at least one compound selected from the group of antimicrobial agents in the range from 0.02% w/w to 0.3% w/w;
- 5 e) at least one compound selected from the group of antimicrobial fixer agents in the range from 0.2% w/w to 0.4% w/w;

19. Phytocosmetic and/or phytotherapeutic formulation, according to claim 9, characterized by the fact that it is a disinfectant for toothbrushes and/or dental prosthesis and/or removable orthodontic retainers and comprises:

- 10 a) at least one essential oil of plants selected from the group that comprises the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof in the range from 0.02% w/w to 0.1% w/w;
- 15 b) at least one compound selected from the group of surfactant agents in the range from 0.1% w/w to 0.5% w/w;
- c) at least one compound selected from the group of humectant agents in the range from 20% w/w to 25% w/w; and
- d) at least one compound selected from the group of antimicrobial agents in the range from 0.02% w/w to 0.1% w/w; and
- 20 e) at least one compound selected from the group of biofilm removing agents in the range from 0.05% w/w to 0.15% w/w;

20. Phytocosmetic and/or phytotherapeutic formulation, according to claims 10 to 19, characterized by the fact that the humectant agent is chosen from the group that comprises:

- 25 a) water-soluble liquid polyols as for example glycerin, propylene glycol, hexylene glycol, butylene glycol, dipropylene glycol and/or combinations thereof;
- b) polyethylene glycol of the formula:



30



- c) wherein R is an alkyl group with 2 or 3 carbon atoms and n is 2 to 10;
- d) methyl glycosides polyethylene glycol ethers;
- e) Urea; and
- 5 f) mixtures thereof.

21. Phytocosmetic and/or phytotherapeutic formulation, according to claims 10 to 19, characterized by the fact that the thickening agent is chosen from the group that comprises carboxylic acid/carboxylate copolymers, hydrophobically-  
10 modified cross-linked copolymers of carboxylic acid and alkyl carboxylate vinila polymers, cross linked acrylic acid polymers, such as methyl cellulose, ethyl cellulose, hydroxyethyl cellulose, hydroxypropyl methyl cellulose, nitro cellulose, sodium cellulose sulfate, sodium carboxymethyl cellulose, crystalline cellulose, cellulose powder, polyvinylpyrrolidone, polyvinyl alcohol, guar gum,  
15 hydroxypropyl guar gum, xanthan gum, arabic gum, tragacanth gum, carob gum, karaya gum, carrageenan, pectin, agar, starch (rice, corn, potato, wheat), algae colloids (algae extract), starch-based polymers such as carboxymethyl starch, methylhydroxypropyl starch, alginic acid-based polymers, propylene glycol esters, sodium polyacrylate, polyethylacrylate, polyacrylamide,  
20 polyethyleneimine, and inorganic water soluble material, bentonite, aluminum magnesium silicate, laponite, hectonite, and anhydrous silicic acid and/or combinations thereof.

22. Phytocosmetic and/or phytotherapeutic formulation, according to claims 10  
25 to 19, characterized by the fact that the surfactant agent is chosen from the group that comprises anionic surfactants, non-ionic surfactants, cationic surfactants and amphoteric/zwitterionic surfactants and/or combinations thereof.

23. Phytocosmetic and/or phytotherapeutic formulation, according to claim 22,  
30 characterized by the fact that the anionic surfactant agent is chosen from the group than comprises alkaline and/or alkaline earth metals salts of fatty acids,

alkyl sulfates ammonium salts, ethoxylated alkyl sulfates, alkyl sulfonates, alkylaryl sulfonates, alkyl sulfosuccinate, alkyl ether sulfosuccinate, alkyl sulfosuccinamate, alkyl amide sulfosuccinate, alkyl carboxilate, alkyl succinate, alkyl carboxilate, alkyl ether carboxilate in which the alkyl or acyl groups from  
5 these different compounds is constituted by a carbonic chain from about 12 to about 20 carbon atoms and the aryl group is constituted by a phenyl or benzyl group and/or combinations thereof.

24. Phytocosmetic and/or phytotherapeutic formulation, according to claim 22,  
10 characterized by the fact that the non-ionic surfactant agent is chosen from the group than comprises ethoxylated alcohols with linear alcohol groups of natural origin with from 12 to 18 carbon atoms and from 2 to 8 EO by mol of alcohol, fatty alcohols with more than 12 EO, alkyl glycosides that satisfies the general formula  $RO(G)_x$ , wherein R means a primary linear or methyl branched,  
15 aliphatic group with from 8 to 22 and preferably from 12 to 18 carbon atoms and G can be an glycosidic unit containing from 5 to 6 carbon atoms, in which the oligomerization degree x, is a number between 1 and 10 and propoxylated fatty acids alkyl esters with 1 to 4 carbon atoms in the alkyl chain, amine oxide N-cocoalkyl-N,N-dimethylamine oxide and N-tallow alkyl-N,N-dihydroxyethylamine  
20 oxide and fatty acids alkanolamides and combinations thereof.

25. Phytocosmetic and/or phytotherapeutic formulation, according to claim 22, characterized by the fact that it the amphotheric/zwitterionic surfactant agent is chosen from the group than comprises amphocarboxylates compounds, alkyl  
25 betaines, amidoalkyl betaines, amidoalkyl sultaines, amphophosphates, phosphobetaines secondary and tertiary amines derivatives or quaternary ammonium derivatives, quaternary phosphonium derivatives or tertiary compounds of sulfonium and/or combinations thereof.

30 26. Phytocosmetic and/or phytotherapeutic formulation, according to claims 10 to 19, characterized by the fact that the antimicrobial agent is chosen from the



group comprising tertiary amines with a fatty alkyl group of 12 to 18 carbon atoms and optionally, until two (poly)oxyethylenes attached to the nitrogen, quaternary ammonium compounds, benzethonium chloride, dodecyl-, tetradecyl- and hexadecyltrimethyl ammonium halides, methylparaben, ethylparaben, butylparaben, propylparaben isobutylparaben, plants selected from the genus *Guatteria* and/or *Protium* and/or *Cyperus*, more specifically *Guatteria citriodora* Ducke., *Protium heptaphyllum* March and *Cyperus rotundus* Linn and combinations thereof.

27. Phytocosmetic and/or phytotherapeutic formulation, according to claims 10 to 19, characterized by the fact that it the abrasive agent is chosen from the group that comprises pomme stone, alumina, silica, alkaline and alkaline earth metal phosphate, such as ortho- meta- and pyrophosphates, carbonates and/or silicates salts such as calcium carbonate, magnesium carbonate, calcium pyrophosphate, calcium phosphate, alkaline metals metaphosphates, magnesium phosphates, magnesium silicate, calcium meta silicate and combinations thereof.

28. Phytocosmetic and/or phytotherapeutic formulation, according to claims 10 to 19, characterized by the fact that the fluor based compound is chosen from the group comprising sodium monofluorophosphate, lithium monofluorophosphate, potassium monofluorophosphate, ammonium monofluorophosphate sodium fluorides, potassium fluorides and combinations thereof.

29. Phytocosmetic and/or phytotherapeutic formulation, according to claims 10 to 19, characterized by the fact that it the biofilm removing agent being chosen from the group that comprises the vegetal extracts as the essential oils in which the selected plant belongs to genus *Cyperus*, specifically *Cyperus rotundus* Linn.



30. Phytocosmetic and/or phytotherapeutic formulation, according to claims 10 to 19, characterized by the fact that the antimicrobial fixer agent is chosen from the group that comprises plant extracts as the essential oils in which the selected plant belongs to the genus *Aniba*, specifically *Aniba roseodora* Ducke.

5

31. Phytocosmetic and/or phytotherapeutic formulation, according to claims 10 to 19, characterized by the fact that it optionally comprises flavouring agents, enzymes, fragrance, pigments, colorants, preservatives, pH regulators, propellants, antioxidants (BHT, BHA), chelants (EDTA, EGTA, among others),  
10 bactericides, fungicides, antiviral agents, opacifying agents, bleach agents, conditioning polymers, silicone and combinations thereof.

32. Method for preparation of a phytocosmetic and/or phytotherapeutic formulation characterized by the fact that it comprises the steps of:

15

a) prepare a mixture of at least one essential oil of plants selected from the group comprising the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof and;

b) add the mixture in a suitable vehicle.

20

33. Method, according to claim 32, characterized by the fact that the formulation is a phytotherapeutic dental gel and comprises the steps of:

a) prepare a vehicle comprising at least one abrasive agent, at least one surfactant agent, at least one flavouring, at least one antimicrobial agent, at least one humectant agent, at least one thickening agent/or water;

25

b) add the mixture comprising at least one essential oil of plants selected from the group comprising the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof with the vehicle of a); and

c) add at least one Fluor based compound and homogenize.

30

34. Method, according to claim 33, characterized by the fact that the preparation of the vehicle comprises the steps of:

a) add at least one abrasive agent, at least one surfactant agent, at least one flavouring agent, at least one antimicrobial agent, and water;

b) add at least one humectant agent and at least one thickening agent;  
and

5 c) add and homogenize the solution of a) with the solution of b).

35. Method, according to claim 32, characterized by the fact that the formulation is a phytotherapeutic dental cream and comprises the steps of:

10 a) prepare a vehicle comprising at least one abrasive agent, at least one surfactant agent, at least one flavouring agent, at least one humectant agent, at least one thickening agent, at least one abrasive agent and water;

b) add a mixture comprising at least one essential oil of plants selected from the group comprising the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof with the vehicle described at a); and

15 c) add at least one Fluor based compound and homogenize.

36. Method, according to claim 35, characterized by the fact that the preparation of the vehicle comprises the steps of:

20 a) mix at least one surfactant agent, at least one flavouring agent and water;

b) mix at least one umectant agent and at least one thickening agent;

c) mix and homogenize the solution of a) with the solution b); and

d) add at least one abrasive agent to c).

25 37. Method, according to claim 32, characterized by the fact that the formulation is a phytotherapeutic paste with calcium hydroxide and comprises the steps of:

a) prepare a mixture of powders comprising calcium hydroxide and bismuth carbonate;

30 b) prepare a mixture comprising at least one essential oil of plants selected from the group comprising the genus *Protium*, *Guatteria* and *Cyperus* and mixtures thereof; and

c) add a) with b).

38. Method, according to claim 37, characterized by the fact that the mixture of essential oils uses olive oil.

5

39. Method, according to claim 32, characterized by the fact that the formulation is a prophylactic phytotherapeutic paste with Fluor and comprises the steps of:

a) prepare a vehicle comprising at least one surfactant agent, at least one humectant agent and at least one thickening agent, an abrasive agent and water;

10

b) add a mix comprising at least one essential oil of plants selected from the group comprising the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof with the vehicle described at a); and

c) add at least one compound based on fluoride and homogenize.

15

40. Method, according to claim 39, characterized by the fact that the preparation of the vehicle comprises the steps of:

a) mix at least one surfactant agent and water;

b) mix at least one humectant agent and at least one thickening agent;

20

c) mix and homogenize the solution of a) with b); and

d) add at least one abrasive agent to c).

41. Method, according to claim 32, characterized by the fact that the formulation is a phytotherapeutic oral rinse and comprises the steps of:

25

a) prepare a solution comprising one antimicrobial agent in water or hydrogen peroxide;

b) add a mixture comprising at least one essential oil of plants selected from the group comprising the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof;

30

c) add alcohol slowly while agitating;

d) optionally add colorants and/or flavourizants; and



e) complete to the final volume with water or hydrogen peroxide.

42. Method, according to claim 32, characterized by the fact that the formulation is a phytotherapeutic glycerinated soap and comprises the steps of:

5 a) prepare a vehicle comprising at least one surfactant agent, at least one humectant agent and at least one thickening agent and water;

b) add a mixture comprising at least one essential oil of plants selected from the group comprising the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof with the vehicle described at a); and

10 c) homogenize.

43. Method, according to claim 42, characterized by the fact that the preparation of the vehicle comprises the steps of:

a) mix at least one surfactant agent and water;

15 b) mix at least one humectant agent and at least one thickening agent; and

c) mix, heat and homogenize the solution of a) with b).

44. Method, according to claim 32, characterized by the fact that the formulation is a phytotherapeutic liquid soap and comprises the steps of:

20 a) prepare a vehicle comprising at least one surfactant agent, at least one humectant agent, at least one thickening agent and water;

b) add a mixture comprising at least one essential oil of plants selected from the group comprising the genus *Protium*, *Guatteria*, *Cyperus* and mixtures thereof with the vehicle described at a); and

25 c) homogenize.

45. Method, according to claim 44, characterized by the fact that the preparation of the vehicle comprises the steps of:

30 a) mix at least one surfactant and water;

b) mix at least one humectant agent and at least one thickening agent;  
and

c) mix, heat, agitate and homogenize the solution of a) with b).

5 46. Method, according to claim 32, characterized by the fact that the formulation is a liquid disinfectant and comprises the steps of:

a) prepare a vehicle comprising at least one surfactant agent;

b) add a mixture comprising at least one essential oil from the plants selected from the group comprising the genus Protium, Guatteria, Cyperus and  
10 mixtures thereof with the vehicle described at a); and

c) homogenize.

47. Method, according to claim 46, characterized by the fact that the preparation of the vehicle comprises the steps of:

15 a) mix at least one surfactant agent and water; and

b) mix, heat and homogenize the solution.

48. Method, according to claim 32, characterized by the fact that the formulation is a prophylactic spray and comprises the steps of:

20 a) add a mixture comprising at least one essential oil of plants selected from the group comprising the genus Protium, Guateria, Cyperus and mixtures thereof with a suitable humectant;

b) add a solution comprising ethanol and salt solution; and

c) homogenize.

25

49. Method, according to claim 32, characterized by the fact that the formulation is a disinfectant for toothbrushes and/or dental prosthesis and/or removable orthodontic retainers and comprises the steps of:

30 a) prepare a suitable vehicle comprising at least one surfactant agent, at least one humectant agent and water;

b) add a mixture comprising at least one essential oil of plants selected from the group comprising the genus Protium, Guateria, Cyperus and mixtures thereof with the vehicle described at a); and

c) homogenize a) within b).

5

50. Method, according to claim 49, characterized by the fact that the preparation of the vehicle comprises the steps of:

a) mix at least one surfactant agent, at least one humectant agent and water; and

10

b) homogenize the solution.



## CORRECTED VERSION

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/BR 2007/000375

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> <b>IPC<sup>8</sup>: A61K 8/99 (2006.01); A61Q 90/00 (2009.01)</b> According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) <b>IPC<sup>8</sup>: A61K, A61Q</b> Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) <b>WPI, EPODOC, PAJ, Medline, Metacrawler</b>		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	A.L.Rüdiger, A.C. Siani and V.F. Veiga: "The Chemistry and Pharmacology of the South America genus Protium Burm.f. (Burseraceae)", Pharmacognosy Reviews, Vol 1, issue 1, Jan - May 2007, pages 93 - 104 [online] URL: <a href="http://www.phcogrev.com/issue1/11.pdf">www.phcogrev.com/issue1/11.pdf</a> [Download: 17 September 2008 (17.09.2008) ]. Pages 93-96.	1,5,6
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.		
<input checked="" type="checkbox"/> See patent family annex.		
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p>		
Date of the actual completion of the international search <b>13 January 2009 (13.01.2009)</b>		Date of mailing of the international search report <b>23 January 2009 (23.01.2009)</b>
Name and mailing address of the ISA/ AT <b>Austrian Patent Office</b> <b>Dresdner Straße 87, A-1200 Vienna</b> Facsimile No. +43 / 1 / 534 24 / 535		Authorized officer <b>BAUMSCHABL F.</b> Telephone No. +43 / 1 / 534 24 / 459

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/BR 2007/000375

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	V.S. Rao, J.L. Maia, F.A. Oliveira, T.L.G. Lemos, M.H. Chaves and F.A. Santos: "Composition and Antociceptive Activity of the Essential Oil from Protium heptaphyllum Resin", Natural Product Communications, Volume 2, issue 12, 2007 ISSN 1555-9475(online), pages 1199 - 1202 URL: <a href="http://www.naturalproduct.us/content/npc-2-12-2007.pdf">www.naturalproduct.us/content/npc-2-12-2007.pdf</a> [Download: 17 September 2008 (17.09.2008) ]. <i>Page 1199, left column; page 1201 literature [6].</i>	1,2,5,6
Y	--- " ---	3,4,7,8
X	Tony Burfield "Updated list of threatened aromatic plants used in the aroma & cosmetic industries. v. 1.04 Feb 2008". [online] pages 1 - 81 URL: <a href="http://www.naturalingredient.org/Articles/v%201.04%20ed.pdf">www.naturalingredient.org/Articles/v%201.04%20ed.pdf</a> [Download: 19 September 2008 (19.09.2008) ]. <i>Page 19 "ANDIROBA".</i>	1,6
X	Zhang Zhizhen, ElSohly Hala N., Jacob Meilissa R., Pasco David S., Walker Larry A. and Clark Alice M. "New sesquiterpenoids from the root of Guatteria multivenia", Journal of natural products, June 2002 (abstract)[online][retrieved on 19 September 2009 (19.09.2009) ]. Retrieved from EPO Medline database, NLM12088427. <i>"Abstract"</i>	1,5,6
Y	<i>"Abstract"</i>	3,4,7,8
X	Duarte Marta Cristina Teixeira, Figueira Glyn Mara, Sartoratto Adilson, Rehder Vera Lúcia Garcia and Delarmelina Camila, "Anti-Candida activity of Brazilian medicinal plants", Journal of ethnopharmacology, 28 February 2005 (28.02.2005) (abstract)[online][retrieved on 2008-09-19]. Retrieved from EPO Medline database, NLM15707770. <i>"Abstract"</i>	1,2,5,6
X	P 2048515 A (SHISEIDO CO LTD), 19 February 1990 (19.02.1990) (abstract)[online][retrieved on 2008-09-19]. Retrieved from EPO EPODOC database. <i>"Abstract"</i>	1
X	JP 62-234006 A (SHISEIDO CO LTD), 14 October 1987 (14.10.1987) (abstract)[online][retrieved on 2008-09-19]. Retrieved from EPO EPODOC database. <i>"Abstract"</i>	1,2



Y	<p style="text-align: center;">--</p> <p>Chao Sc., Young DG. and Oberg C.J., "Screening for Inhibitory Activity of Essential Oils on Selected Bacteria, Fungi and Viruses", J.Essent.Oil Res. Vol.12, Nr. 5, pp. 639 - 649. Sept-Oct 2000 (abstract)[online]. URL: <a chao"+intitle:"screening+for+inhibitory+activity+of+essential+oils+on+..."+"&amp;setcookie='yes"' href="http://md1.csa.com/partners/viewrecord.php?requester=gs&amp;collection=ENV&amp;recid=4778029&amp;q=author:">//md1.csa.com/partners/viewrecord.php?requester=gs&amp;collection=ENV&amp;recid=4778029&amp;q=author:"Chao"+intitle:"Screening+for+Inhibitory+Activity+of+Essential+Oils+on+..."+"&amp;setcookie=yes</a> [Download: 19 September 2008 (19.09.2008) ] <i>"Abstract"</i></p>	3,4,7,8
Y	<p style="text-align: center;">-</p> <p>On-Line Catalog Em's Place Essential Oils, Last modified 3 January 2006 (03.01.2006) (online). URL:<a href="http://www.emsplace.com/grooming/essential_oils.aspx">://www.emsplace.com/grooming/essential_oils.aspx</a> [Download: 2008-09-19] <i>"Rosewood - Aniba rosaeodora"</i></p>	3,4,7,8
Y	<p style="text-align: center;">--</p> <p>Luis Antonio Serrao Contim, Carlos Roberto de Carvalho, Franciele Aline Martins and Danival Viera de Freitas, "Nuclear DNA content and karyotype of Rosewood (Aniba rosaeodora)", Genetics and Molecular Biology,28,4,754-757(2005) (online) URL: <a href="http://www.scielo.br/pdf/gmb/v28n4/a17v28n4.pdf">www.scielo.br/pdf/gmb/v28n4/a17v28n4.pdf</a> [Download: 19 September 2008 (19.09.2008) ]. <i>Page 754 - Introduction.</i></p>	3,4,7,8



**Continuation of first sheet**

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**Continuation No. III:**

**Observations where unity of invention is lacking**

**(Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

Invention I: claims 1 to 8.

Invention II: claims 9,10, 20 - 34 (phytotherapeutic dental gel).

Invention III: claims 9,11, 20 - 32, 35, 36 (phytotherapeutic dental cream).

Invention IV: claims 9,12, 26, 29, 31, 32, 37, 38 (phytotherapeutic paste with calcium hydroxide).

Invention V: claims 9, 13, 20 - 32, 39, 40 (phytotherapeutic paste with Fluor).

Invention VI: claims 9, 14, 20 - 32, 41 (phytotherapeutic oral rinse).

Invention VII: claims 9, 15, 20 - 32, 42, 43 (phytotherapeutic glycerinated soap).

Invention VIII: claims 9, 16, 20 - 32, 44, 45 (phytotherapeutic liquid soap).

Invention IX: claims 9,17, 20 - 32, 46, 47 (liquid disinfect).

Invention X: claims 9, 18, 20 - 32, 48 (prohylactic spray).

Invention XI: claims 9, 18 - 32, 49, 50 (disinfect for toothbrushes and/or dental prostheses and/or removable orthodontic retainers).

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos. Claims 1 to 8.

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**Continuation No. IV:**

**Text of the abstract**

**(Continuation of item 5 of the first sheet)**

The present invention provide formulations with antibacterial and biofilm removing actions comprising plant extracts, comprising at least one plant oil wherein the plant is selected from the group comprising the genus Protium, Guatteria, Cyperus in a suitable vehicle.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.  
PCT/BR 2007/000375

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
A		none	
JP A 62234006A2		none	

# PCT

## REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only
PCT / BR 2007 / 000375 International Application No.
28 DEZ 2007 28 12 07 International Filing Date
INPI/BRAZIL-PCT INTERNATIONAL APPLICATION Name of receiving Office and "PCT International Application"
Applicant's or agent's file reference (if desired) (12 characters maximum)

<b>Box No. I TITLE OF INVENTION</b> ACTIVE FORMULATIONS BASED ON PLANT EXTRACTS, PHYTOCOSMETIC AND/OR PHYTOTHERAPEUTIC FORMULATIONS COMPRISING THE SAME AND METHOD FOR	
<b>Box No. II APPLICANT</b> <input type="checkbox"/> This person is also inventor	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) Instituto Nacional de Pesquisa da Amazônia -INPA Av. André Araújo, nº. 2.936 Cep: 69060-001 - Petrópolis Manaus - AM Brasil	Telephone No. Facsimile No. Teleprinter No. Applicant's registration No. with the Office
State (that is, country) of nationality: BR	State (that is, country) of residence: BR
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<b>Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)</b>	
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State (that is, country) of nationality:	State (that is, country) of residence:
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<input type="checkbox"/> Further applicants and/or (further) inventors are indicated on a continuation sheet.	
<b>Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE</b>	
The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: <input type="checkbox"/> agent <input type="checkbox"/> common representative	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) ATEM & REMER ASSESSORIA E CONSULTORIA DE PROPRIEDADE INTELECTUAL LTDA. Praça Floriano, 19, 28º andar CEP: 20031-050 - Cinelândia Rio de Janeiro - RJ Brasil	Telephone No. 5521-3212-8200 Facsimile No. 5521-3212-8201 Teleprinter No. Agent's registration No. with the Office
<input type="checkbox"/> <b>Address for correspondence:</b> Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.	



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Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</i> <b>RENILTO FROTA CORRÊA</b> Rua 24, nº. 977 - Conjunto Castelo Branco - Parque 10 Cep: 69055-420 Manaus - AM Brasil	This person is: <input type="checkbox"/> applicant only <input checked="" type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i>
Applicant's registration No. with the Office	
State <i>(that is, country)</i> of nationality: <b>BR</b>	State <i>(that is, country)</i> of residence: <b>BR</b>
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</i> <b>JANAÍNA PAOLUCCI SALES</b> Rua 24, nº. 977 - Conjunto Castelo Branco - Parque 10 Cep: 69055-420 Manaus - AM Brasil	This person is: <input type="checkbox"/> applicant only <input checked="" type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i>
Applicant's registration No. with the Office	
State <i>(that is, country)</i> of nationality: <b>BR</b>	State <i>(that is, country)</i> of residence: <b>BR</b>
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</i> <b>JAQUELINE DE ARAÚJO BEZERRA</b> Rua Sol Nascente, nº. 583A - JAPIIM I Cep: 69078-170 Manaus - AM Brasil	This person is: <input type="checkbox"/> applicant only <input checked="" type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i>
Applicant's registration No. with the Office	
State <i>(that is, country)</i> of nationality: <b>BR</b>	State <i>(that is, country)</i> of residence: <b>BR</b>
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</i> <b>DIEGO DE MOURA RABELO</b> Rua 207, nº 14, núcleo 16 - Cidade Nova IV Cep: 69098-370 Manaus - AM Brasil	This person is: <input type="checkbox"/> applicant only <input checked="" type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i>
Applicant's registration No. with the Office	
State <i>(that is, country)</i> of nationality: <b>BR</b>	State <i>(that is, country)</i> of residence: <b>BR</b>
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<input checked="" type="checkbox"/> Further applicants and/or (further) inventors are indicated on another continuation sheet.	

**Supplemental Box**

If the Supplemental Box is not used, this sheet should not be included in the request.

1. If, in any of the Boxes, except Boxes Nos. VIII(i) to (v) for which a special continuation box is provided, the space is insufficient to furnish all the information: in such case, write "Continuation of Box No...." (indicate the number of the Box) and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient, in particular:
- (i) if more than two persons are to be indicated as applicants and/or inventors and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below;
- (ii) if, in Box No. II or in any of the sub-boxes of Box No. III, the indication "the States indicated in the Supplemental Box" is checked: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is applicant;
- (iii) if, in Box No. II or in any of the sub-boxes of Box No. III, the inventor or the inventor/applicant is not inventor for the purposes of all designated States or for the purposes of the United States of America: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor(s) and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is inventor;
- (iv) if, in addition to the agent(s) indicated in Box No. IV, there are further agents: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV;
- (v) if, in Box No. VI, there are more than three earlier applications whose priority is claimed: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI.
2. If the applicant intends to make an indication of the wish that the international application be treated, in certain designated States, as an application for a patent of addition, certificate of addition, inventor's certificate of addition or utility certificate of addition: in such a case, write the name or two-letter code of each designated State concerned and the indication "patent of addition," "certificate of addition," "inventor's certificate of addition" or "utility certificate of addition," the number of the parent application or parent patent or other parent grant and the date of grant of the parent patent or other patent grant or the date of filing of the parent application (Rules 4.11(a)(iii) and 49bis.1(a) or (b)).
3. If the applicant intends to make an indication of the wish that the international application be treated, in the United States of America, as a continuation or continuation-in-part of an earlier application: in such a case, write "United States of America" or "US" and the indication "continuation" or "continuation-in-part" and the number and the filing date of the parent application (Rules 4.11(a)(iv) and 49bis.1(d)).
- Continuation of Box nº III - Further Inventors
- 5) LUIZ ANTONIO DE OLIVEIRA  
Rua Benjamin Benchimol, nº 125  
Cj Petro, Coroado 03  
Cep: 69083-040  
Manaus - AM  
Brasil  
Nationality: BR State of residence: BR  
This person is: applicant and inventor  
This person is applicant for the USA only.
- 6) MARIA LÚCIA BELÉM PINHEIRO  
Rua Saldanha Marinho, nº 745, Apt. 501  
Cep: 69010-040 - Centro  
Manaus - AM  
Brasil  
Nationality: BR State of residence: BR  
This person is: applicant and inventor  
This person is applicant for the USA only.
- 7) SILO SOARES DA SILVA  
Rua Santa Rita, Nº. 66 - Coroado II  
Cep: 69080-460  
Manaus - AM  
Brasil  
Nationality: BR State of residence: BR  
This person is: applicant and inventor  
This person is applicant for the USA only.
- 8) SPARTACO ASTOLFI FILHO  
Rua Ayres de Almeida, Condomínio Parque  
Solimões, bl. 12 A, apt. 301  
Cep: 69068-130  
Manaus - AM  
Brasil  
Nationality: BR State of residence: BR  
This person is: applicant and inventor  
This person is applicant for the USA only.







**Box No. IX CHECK LIST; LANGUAGE OF FILING**

This international application contains:

(a) **in paper form**, the following number of sheets:

request (including declaration sheets) : 7

description (excluding sequence listing and/or tables related thereto) : 26

claims : 16

abstract : 1

drawings : \_\_\_\_\_

**Sub-total number of sheets** : 50

sequence listing : \_\_\_\_\_

tables related thereto : \_\_\_\_\_

*(for both, actual number of sheets if filed in paper form, whether or not also filed in computer readable form; see (c) below)*

**Total number of sheets** : 50

(b)  **only in computer readable form** (Section 801(a)(i))

(i)  sequence listing

(ii)  tables related thereto

(c)  **also in computer readable form** (Section 801(a)(ii))

(i)  sequence listing

(ii)  tables related thereto

**Type and number of carriers** (diskette, CD-ROM, CD-R or other) on which are contained the

sequence listing: \_\_\_\_\_

tables related thereto: \_\_\_\_\_

*(additional copies to be indicated under items 9(ii) and/or 10(ii), in right column)*

This international application is **accompanied** by the following item(s) *(mark the applicable check-boxes below and indicate in right column the number of each item)*:

1. <input checked="" type="checkbox"/> fee calculation sheet	: 1
2. <input type="checkbox"/> original separate power of attorney	: _____
3. <input checked="" type="checkbox"/> original general power of attorney	: 1
4. <input type="checkbox"/> copy of general power of attorney; reference number, if any: _____	: _____
5. <input type="checkbox"/> statement explaining lack of signature	: _____
6. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s): _____	: _____
7. <input type="checkbox"/> translation of international application into (language): _____	: _____
8. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material	: _____
9. <input type="checkbox"/> sequence listing in computer readable form <i>(indicate type and number of carriers)</i>	: _____
(i) <input type="checkbox"/> copy submitted for the purposes of international search under Rule 13ter only (and not as part of the international application) :	: _____
(ii) <input type="checkbox"/> <i>(only where check-box (b)(i) or (c)(i) is marked in left column)</i> additional copies including, where applicable, the copy for the purposes of international search under Rule 13ter	: _____
(iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the sequence listing mentioned in left column	: _____
10. <input type="checkbox"/> tables in computer readable form related to sequence listing <i>(indicate type and number of carriers)</i>	: _____
(i) <input type="checkbox"/> copy submitted for the purposes of international search under Section 802(b-quarter) only (and not as part of the international application) :	: _____
(ii) <input type="checkbox"/> <i>(only where check-box (b)(ii) or (c)(ii) is marked in left column)</i> additional copies including, where applicable, the copy for the purposes of international search under Section 802(b-quarter)	: _____
(iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the tables mentioned in left column	: _____
11. <input type="checkbox"/> other <i>(specify)</i> : _____	: _____

Figure of the drawings which should accompany the abstract:

Language of filing of the international application: English

**Box No. X SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE**

*Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).*



**ATEM & REMER ASSESSORIA E CONSULTORIA DE PROPRIEDADE INTELECTUAL LTDA.**  
CNPJ No. 07.336.918/0001-66

For receiving Office use only	
1. Date of actual receipt of the purported international application:	28 DEZ 2007 2 8 12 07
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	2. Drawings: <input type="checkbox"/> received:  <input type="checkbox"/> not received:
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority (if two or more are competent): ISA /	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid

For International Bureau use only

Date of receipt of the record copy by the International Bureau:

**Box No. VIII (iv) DECLARATION: INVENTORSHIP (only for the purposes of the designation of the United States of America)**  
*The declaration must conform to the following standardized wording provided for in Section 214; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (iv). If this Box is not used, this sheet should not be included in the request.*

**Declaration of inventorship (Rules 4.17(iv) and 51bis.1(a)(iv))  
 for the purposes of the designation of the United States of America:**

I hereby declare that I believe I am the original, first and sole (if only one inventor is listed below) or joint (if more than one inventor is listed below) inventor of the subject matter which is claimed and for which a patent is sought.

This declaration is directed to the international application of which it forms a part (if filing declaration with application).

This declaration is directed to international application No. PCT/..... (if furnishing declaration pursuant to Rule 26ter).

I hereby declare that my residence, mailing address, and citizenship are as stated next to my name.

I hereby state that I have reviewed and understand the contents of the above-identified international application, including the claims of said application. I have identified in the request of said application, in compliance with PCT Rule 4.10, any claim to foreign priority, and I have identified below, under the heading "Prior Applications," by application number, country or Member of the World Trade Organization, day, month and year of filing, any application for a patent or inventor's certificate filed in a country other than the United States of America, including any PCT international application designating at least one country other than the United States of America, having a filing date before that of the application on which foreign priority is claimed.

Prior Applications: .....

I hereby acknowledge the duty to disclose information that is known by me to be material to patentability as defined by 37 C.F.R. § 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the PCT international filing date of the continuation-in-part application.

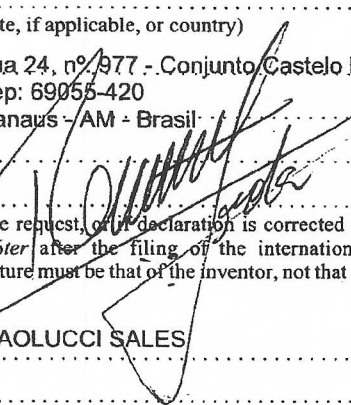
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name: RENILTO FROTA CORRÊA

Residence: .....  
 (city and either US state, if applicable, or country)

Mailing Address: Rua 24, nº. 977 - Conjunto Castelo Branco - Parque 10  
Cep: 69055-420  
Manaus - AM - Brasil

Citizenship: BR

Inventor's Signature:   
 (if not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor, not that of the agent)

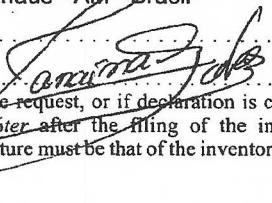
Date: 12/12/07  
 (of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)

Name: JANAÍNA PAOLUCCI SALES

Residence: .....  
 (city and either US state, if applicable, or country)

Mailing Address: Rua 24, nº. 977 - Conjunto Castelo Branco - Parque 10  
Cep: 69055-420  
Manaus - AM - Brasil

Citizenship: BR

Inventor's Signature:   
 (if not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor, not that of the agent)

Date: 12/12/07  
 (of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)

This declaration is continued on the following sheet, "Continuation of Box No. VIII (iv)".



Sheet No. ....

**Continuation of Box No. VIII (i) to (v) DECLARATION**

If the space is insufficient in any of Boxes Nos. VIII (i) to (v) to furnish all the information, including in the case where more than two inventors are to be named in Box No. VIII (iv), in such case, write "Continuation of Box No. VIII ..." (indicate the item number of the Box) and furnish the information in the same manner as required for the purposes of the Box in which the space was insufficient. If additional space is needed in respect of two or more declarations, a separate continuation box must be used for each such declaration. If this Box is not used, this sheet should not be included in the request.

**Continuation of Box VIII (iv) - Declaration: Inventorship**

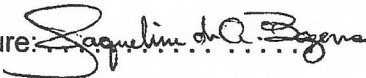
3) Name: JAQUELINE DE ARAÚJO BEZERRA

Mailing Address: Rua Sol Nascente, nº. 583A - JAPIIM I

Cep: 69078-170

Manaus - AM - Brasil

Citizenship: BR

Inventor's Signature:  Date: 12/12/07

4) Name: DIEGO DE MOURA RABELO

Mailing address: Rua 207, nº 14, núcleo 16 - Cidade Nova IV

Cep: 69098-370

Manaus - AM - Brasil

Citizenship: BR

Inventor's Signature:  Date: 12/12/07

5) Name: LUIZ ANTONIO DE OLIVEIRA

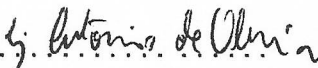
Mailing address: Rua Benjamin Benchimol, nº 125

Cj Petro, Coroado 03

Cep: 69083-040

Manaus - AM - Brasil

Citizenship: BR

Inventor's Signature:  Date: 12/12/07

6) Name: MARIA LÚCIA BELÉM PINHEIRO

Mailing address: Rua Saldanha Marinho, nº 745, Apt. 501

Cep: 69010-040 - Centro

Manaus - AM - Brasil

Citizenship: BR

Inventor's Signature:  Date: 12/12/07

7) Name: SILO SOARES DA SILVA

Mailing address: Rua Santa Rita, Nº. 66 - Coroado II

Cep: 69080-460

Manaus - AM - Brasil

Citizenship: BR

Inventor's Signature:  Date: 12.12.07

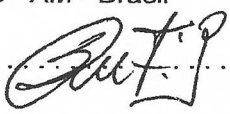
8) Name: SPARTACO ASTOLFI FILHO

Mailing address: Rua Ayres de Almeida, Cond. Parque Solimões, bl. 12 A, apt. 301

Cep: 69068-130

Manaus - AM - Brasil

Citizenship: BR

Inventor's Signature:  Date: 21/12/07



# (12) International Application Status Report

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**(26) Publication language:**

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**(21) Application Number:**

PCT/BR2007/000375

**(22) Filing Date:**

28 December 2007 (28.12.2007)

**(25) Filing language:**

English (EN)

**(51) International Patent Classification:**

A61K 8/99 (2006.01); A61Q 90/00 (2009.01)

**(71) Applicant(s):**

INSTITUTO NACIONAL DE PESQUISA DA AMAZÔNIA - INPA [BR/BR]; Av. André Araújo, nº 2.936 Cep: 69060-001 - Petrópolis Manaus - AM (BR) *(for all designated states except US)*  
FROTA CORREA, Renilto [BR/BR]; Rua 24, nº. 977 - Conjunto Castelo Branco Parque 10 Cep: 69055-420 (BR) *(for US only)*  
PAOLUCCI SALES, Janaina [BR/BR]; Rua 24, nº. 977 - Conjunto Castelo Branco Parque 10 Cep: 69055-420 (BR) *(for US only)*  
DE ARAÚJO BEZERRA, Jaqueline [BR/BR]; Rua Sol Nascente, nº. 583A - JAPIIM I Cep: 69078-170 Manaus - AM (BR) *(for US only)*  
DE MOURA RABELO, Diego [BR/BR]; Rua 207, nº 14, nucleo 16 - Cidade Nova IV Cep: 69098-370 Manaus - AM (BR) *(for US only)*  
DE OLIVEIRA, Luiz Antonio [BR/BR]; Rua Benjamín Benchimol, nº 125 Cj Petro, Coroado 03 Cep: 69083-040 Manaus - AM (BR) *(for US only)*  
BELÉM PINHEIRO, Maria, Lucia [BR/BR]; Rua Saldanha Marinho, nº 745, Apt. 501 Cep: 69010-040 - Centro Manaus - AM (BR) *(for US only)*  
DA SILVA, Silo Soares [BR/BR]; Rua Santa Rita, Nº. 66 - Coroado II Cep: 69080-460 Manaus - AM (BR) *(for US only)*  
ASTOLFI FILHO, Spartaco [BR/BR]; Rua Ayres de Almeida, Condominio Parque Solimões, bl. 12 A, apt. 301 Cep: 69068-130 Manaus - AM (BR) *(for US only)*

**(72) Inventor(s):**

FROTA CORREA, Renilto; Rua 24, nº. 977 - Conjunto Castelo Branco Parque 10 Cep: 69055-420 (BR)  
PAOLUCCI SALES, Janaina; Rua 24, nº. 977 - Conjunto Castelo Branco Parque 10 Cep: 69055-420 (BR)  
DE ARAÚJO BEZERRA, Jaqueline; Rua Sol Nascente, nº. 583A - JAPIIM I Cep: 69078-170 Manaus - AM (BR)  
DE MOURA RABELO, Diego; Rua 207, nº 14, nucleo 16 - Cidade Nova IV Cep: 69098-370 Manaus - AM (BR)  
DE OLIVEIRA, Luiz Antonio; Rua Benjamín Benchimol, nº 125 Cj Petro, Coroado 03 Cep: 69083-040 Manaus - AM (BR)  
BELÉM PINHEIRO, Maria, Lucia; Rua Saldanha Marinho, nº 745, Apt. 501 Cep: 69010-040 - Centro Manaus - AM (BR)  
DA SILVA, Silo Soares; Rua Santa Rita, Nº. 66 - Coroado II Cep: 69080-460 Manaus - AM (BR)  
ASTOLFI FILHO, Spartaco; Rua Ayres de Almeida, Condominio Parque Solimões, bl. 12 A, apt. 301 Cep: 69068-130 Manaus - AM (BR)

**(74) Agent(s):**

ATEM & REMER ASSESSORIA E CONSULTORIA DE PROPRIEDADE INTELECTUAL LTDA; Praça Floriano, 19/28º andar CEP: 20031-050 Cinelândia Rio de Janeiro - RJ (BR)

**(54) Title (EN):** ACTIVE FORMULATIONS BASED ON ESSENTIAL OIL OF PLANTS OF THE GENUS PROTIUM, GUATTERIA, CYPERUS AND THE MIXTURE THEREOF

**(54) Title (FR):** FORMULATIONS ACTIVES À BASE D'HUILE ESSENTIELLE DE PLANTES DU GENRE PROTIUM, GUATTERIA, CYPERUS ET D'UN MÉLANGE DE CELLES-CI

**(57) Abstract:**

**(EN):** The present invention provide formulations with antibacterial and biofilm removing actions comprising plant extracts, comprising at least one plant oil wherein the plant is selected from the group comprising the genus Protium, Guatteria, Cyperus in a suitable vehicle.

**(FR):** La présente invention concerne des formulations ayant une action antibactérienne et une action d'élimination du biofilm, ces formulations comprenant des extraits de plantes et au moins une huile végétale. La plante est sélectionnée dans le groupe comprenant le genre Protium, Guatteria, Cyperus dans un excipient approprié.

**International search report:**

Received at International Bureau: 29 January 2009 (29.01.2009) [AT]

**International preliminary examination report:**

Not available

**(81) Designated States:**

AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

European Patent Office (EPO) : AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR

African Intellectual Property Organization (OAPI) : BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

African Regional Intellectual Property Organization (ARIPO) : BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW

Eurasian Patent Organization (EAPO) : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

**Declarations:**

Declaration of inventorship (Rules 4.17(iv) and 51bis.1(a)(iv)) for the purposes of the designation of the United States of America