The present invention discloses a composition for treating a condition which is adapted for application to the skin. The condition is characterized by inflammation of tissue. The composition comprises a mixture of cannabis flower extract and cannabis seed extract.
FIELD OF THE INVENTION

This invention relates to preparations with anti-inflammatory properties, in particular, those preparations containing as active ingredients extracts of flowers and seeds of *Cannabis* sp.

BACKGROUND OF THE INVENTION


While cannabinoids have been investigated as possible therapeutic agents for a wide variety of conditions, ranging from glaucoma to Tourette's syndrome, and Sativex®, which contains THC and cannabidiol (CBD), has been licensed in Canada as a therapy against multiple sclerosis, most cannabinoid-containing preparations thus far developed have been for the treatment of conditions characterized by inflammation. Thus, PCT Application WO2009/004302 discloses the use of a tetrahydrocannabinol (THC) in a medicament for treatment of inflammatory bowel disease. U.S. Patent Application 11/327,693 discloses the use of cannabiol derivatives for treatment inter alia of diseases which are the result of inflammation such as Crohn's disease, ulcerative colitis, and some forms of asthma. U.S. Patent Application 11/115,983 discloses a combination of THC and CBD for use to alleviate pain associated with cancer.
More relevant to the present invention, a number of inventions have been disclosed that include cannabinoids as therapeutic agents for treatment of skin conditions, or that disclose dermal or transdermal delivery methods for cannabinoids. For example, PCT Application WO2007/001891 discloses a composition in which a cannabinoid is combined with a permeation enhancer for improved transdermal delivery of the cannabinoid, while PCT Application WO2008/024408 discloses a composition for transdermal delivery of a cannabinoid that reduces the likelihood of the patient's using the cannabinoid as a drug of abuse.

In addition to those inventions in which a cannabinoid is combined with a material that is not specifically directed against a medical condition, a number of inventions have been disclosed in which a cannabinoid is used in combination with another therapeutic agent. For example, U.S. Patent Application 11/510,390 discloses a combination therapy in which a cannabinoid receptor agonist (e.g. THC) is combined with a cannabinoid receptor antagonist that serves to potentiate the activity of the cannabinoid receptor agonist. PCT Application WO2005/102296 discloses a number of compositions, including *inter alia* compositions containing a cannabinoid and a long-chain unsaturated fatty acid, for treatment of immunoproliferative skin disorders such as psoriasis.

All of these compositions have in common that they comprise a limited set of specific compounds. The cannabinoids in these compounds are either extracted and purified from *Cannabis* sp., or are synthetic derivatives or analogs of naturally-occurring cannabinoids. It is known, however, that the pharmaceutical activity of cannabis extract is different than that of pure cannabinoids such as THC, and the possibility of synergistic effects among the components of cannabis extract has been hypothesized (Ben-Shabat, S; Fride, E.; Sheskin, T.; Tamiri, T.; Rhee, M. H.; Vogel, Z.; Bisogno, T.; De Petrocellis, L.; Di Marzio, V.; Mechoulam, R. "An Entourage Effect: Inactive Endogenous Fatty Acid Glycerol Esters Enhance 2-arachidonoyl-glycerol Cannabinoid Activity," *Eur. J. Pharmacol.* 1998, 353, 23-31; Russo, E.; Guy, G. W. "A Tale of Two Cannabinoids: the Therapeutic Rationale for Combining Tetrahydrocannabinol and Cannabidiol," *Med Hypoth.* 2006, 66, 234). Nonetheless, therapeutic compositions that are based on cannabis extract rather than on specific cannabinoids remain unknown in the art. Thus, there remains a long-felt need for such compositions that rely on these synergistic effects, especially in the treatment of diseases characterized by inflammation of tissues.
SUMMARY OF THE INVENTION

The invention disclosed herein comprises a mixture of extracts from flowers and seeds of Cannabis sp. The anti-inflammatory properties of these extracts is used to produce an all-natural composition that is effective against conditions, particularly skin conditions, that are characterized by inflammation of tissues. The particular combination of these two extracts has a synergistic effect over either extract used alone. The composition can also be incorporated into an ointment for dermal or transdermal application of the composition.

It is therefore an object of the invention to disclose a composition for treating a condition, said composition adapted for application to the skin and said condition characterized by inflammation of tissue, wherein said composition comprises a mixture of cannabis flower extract and cannabis seed extract.

It is a further object of this invention to disclose such a composition, wherein the ratio of cannabis flower extract to cannabis seed extract is between about 1:99 and about 99:1.

It is a further object of this invention to disclose such a composition, wherein the ratio of cannabis flower extract to cannabis seed extract is between about 20:80 and about 5:95.

It is a further object of this invention to disclose such a composition, wherein the ratio of cannabis flower extract to cannabis seed extract is about 5:95.

It is a further object of this invention to disclose such a composition, wherein said cannabis flower extract is obtained by extraction with ethanol.

It is a further object of this invention to disclose such a composition, wherein said cannabis flower extract is obtained by extraction of dried flowers of Cannabis sp. by ethanol.

It is a further object of this invention to disclose such a composition, wherein said cannabis flower extract is obtained from a hybrid plant of Cannabis indica and Cannabis sativa.

It is a further object of this invention to disclose such a composition as defined in any of the above, wherein said hybrid plant is about 80% Cannabis indica and about 20% Cannabis sativa.

It is a further object of this invention to disclose such a composition as defined in any of the above, wherein said ethanol is obtained from fermentation and distillation of fruits of Punica granatum.

It is a further object of this invention to disclose such a composition, wherein said Punica granatum is organically grown.

It is a further object of this invention to disclose such a composition as defined in any of the above, wherein said cannabis seed extract is obtained by supercritical fluid extraction by CO₂.
It is a further object of this invention to disclose such a composition as defined in any of the above, wherein said cannabis seed extract is obtained by cold pressing.

It is a further object of this invention to disclose such a composition as defined in any of the above, wherein said cannabis seed extract is obtained from seeds of *Cannabis sativa*.

It is a further object of this invention to disclose such a composition as defined in any of the above, wherein said *Cannabis sativa* is a genotype the seeds of which have a high gamma linolenic acid content.

It is a further object of this invention to disclose such a composition as defined in any of the above, wherein said *Cannabis sativa* is organically grown.

It is a further object of this invention to disclose such a composition as defined in any of the above, wherein said cannabis seed extract is provided in a base comprising about 85% cannabis seed extract, about 10% pomegranate seed oil, and about 5% wheat kernel oil.

It is a further object of this invention to disclose such a composition, wherein said composition comprises said cannabis flower extract and said base in a ratio of about 5:95.

It is a further object of this invention to disclose such a composition as defined in any of the above, wherein said condition is atopic dermatitis.

It is a further object of this invention to disclose such a composition as defined in any of the above, wherein said condition is psoriasis.

It is a further object of this invention to disclose such a composition as defined in any of the above, wherein said condition is psoriatic arthritis.

It is a further object of this invention to disclose such a composition as defined in any of the above, wherein said condition is rheumatoid arthritis.

It is a further object of this invention to disclose a transdermal ointment for treating a condition characterized by inflammation of tissue, wherein said transdermal ointment comprises a composition according to claim 1 compounded with a vehicle.

It is a further object of this invention to disclose such an ointment, wherein said ointment comprises between about 5% and about 15% of said composition.

It is a further object of this invention to disclose such an ointment, wherein said ointment comprises between about 8% and about 12% of said composition.

It is a further object of this invention to disclose such an ointment, wherein said ointment comprises about 9% of said composition.

It is a further object of this invention to disclose such an ointment as defined in any of the above, wherein said vehicle is Cera Alba.
It is a further object of this invention to disclose such an ointment as defined in any of the above, further comprising DMSO.

It is a further object of this invention to disclose such an ointment, wherein said ointment comprises between about 1% and about 25% DMSO.

It is a further object of this invention to disclose such an ointment, wherein said ointment comprises between about 5% and about 15% DMSO.

It is a further object of this invention to disclose such an ointment, wherein said ointment comprises about 10% DMSO.

It is a further object of this invention to disclose such an ointment, wherein said condition is atopic dermatitis.

It is a further object of this invention to disclose such an ointment, wherein said condition is psoriasis.

It is a further object of this invention to disclose such an ointment, wherein said condition is psoriatic arthritis.

It is a further object of this invention to disclose such an ointment, wherein said condition is rheumatoid arthritis.

It is a further object of this invention to provide a method for producing a composition adapted for treatment of a condition characterized by inflammation of tissues, said method comprising the steps of (a) obtaining cannabis flower extract; (b) obtaining cannabis seed extract; and (c) mixing said cannabis flower extract and said cannabis seed extract in a predetermined ratio until a homogeneous composition is obtained.

It is a further object of this invention to provide such a method, wherein said predetermined ratio is between about 1:99 and about 99:1.

It is a further object of this invention to provide such a method, wherein said predetermined ratio is between about 20:80 and about 5:95.

It is a further object of this invention to provide such a method, wherein said predetermined ratio is about 5:95.

It is a further object of this invention to provide such a method, wherein said step of obtaining cannabis flower extract further includes the additional step of extracting cannabis flowers with ethanol.

It is a further object of this invention to provide such a method, wherein said step of obtaining cannabis flower extract further includes the additional step of obtaining dried flowers of Cannabis sp.
It is a further object of this invention to provide such a method, wherein said step of obtaining cannabis flower extract further includes the additional step of extracting cannabis flowers obtained from a hybrid plant of Cannabis indica and Cannabis sativa.

It is a further object of this invention to provide such a method, wherein said hybrid plant is about 80% Cannabis indica and about 20% Cannabis sativa.

It is a further object of this invention to provide such a method, further comprising the additional steps of (a) fermenting and distilling alcohol from fruits of Punica granatum; and (b) using said alcohol in said step of extracting cannabis flowers.

It is a further object of this invention to provide such a method, wherein said Punica granatum is organically grown.

It is a further object of this invention to provide such a method, wherein said step of obtaining cannabis seed extract further comprises the step of extracting cannabis seeds using supercritical CO₂.

It is a further object of this invention to provide such a method, wherein said step of obtaining cannabis seed extract further comprises the step of extracting cannabis seeds by cold pressing.

It is a further object of this invention to provide such a method, wherein said step of obtaining cannabis seed extract further comprises the additional steps of (a) obtaining seeds of Cannabis sativa; and (b) producing an extract from said seeds.

It is a further object of this invention to provide such a method, wherein said step of obtaining seeds of Cannabis sativa further comprises the additional step of obtaining seeds from a genotype of Cannabis sativa the seeds of which have a high gamma linolenic acid content.

It is a further object of this invention to provide such a method, wherein said Cannabis sativa is organically grown.

It is a further object of this invention to provide such a method, wherein said step of obtaining cannabis seed extract further comprises the additional step of preparing a base comprising about 85% cannabis seed extract, about 10% pomegranate seed oil, and about 5% wheat kernel oil.

It is a further object of this invention to provide such a method, wherein said step of mixing said cannabis flower extract and said cannabis seed extract further includes the additional step of mixing said cannabis flower extract and said base in a ratio of about 5:95.

It is a further object of this invention to provide such a method as defined in any of the above, wherein said condition is atopic dermatitis.
It is a farther object of this invention to provide such a method as defined in any of the above, wherein said condition is psoriasis.

It is a further object of this invention to provide such a method as defined in any of the above, wherein said condition is psoriatic arthritis.

It is a farther object of this invention to provide such a method as defined in any of the above, wherein said condition is rheumatoid arthritis.

It is a further object of this invention to provide a method for producing a transdermal ointment adapted for the treatment of a condition characterized by inflammation of tissues, said method comprising the steps of: (a) preparing a composition adapted for the treatment of a condition characterized by inflammation of tissues according to the method as defined in any of the above; and (b) compounding said mixture with a vehicle in a predetermined ratio.

It is a further object of this invention to provide such a method for producing a transdermal ointment, wherein said vehicle is Cera Alba.

It is a further object of this invention to provide such a method for producing a transdermal ointment as defined in any of the above, wherein said predetermined ratio is between about 5:95 and about 15:85.

It is a further object of this invention to provide such a method for producing a transdermal ointment as defined in any of the above, wherein said predetermined ratio is between about 8:92 and about 12:88.

It is a further object of this invention to provide such a method for producing a transdermal ointment as defined in any of the above, wherein said predetermined ratio is about 9:91.

It is a farther object of this invention to provide such a method for producing a transdermal ointment as defined in any of the above, further comprising the additional step of adding a predetermined amount of DMSO to said vehicle.

It is a farther object of this invention to provide such a method for producing a transdermal ointment as defined in any of the above, wherein said predetermined amount of DMSO is between about 1% and about 25% of the total amount of vehicle.

It is a farther object of this invention to provide such a method for producing a transdermal ointment as defined in any of the above, wherein said predetermined amount of DMSO is between about 5% and about 15% of the total amount of vehicle.

It is a farther object of this invention to provide such a method for producing a transdermal ointment as defined in any of the above, wherein said predetermined amount of DMSO is about 10% of the total amount of vehicle.
DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the following description, various aspects of the invention will be described. For the purposes of explanation, specific details are set forth in order to provide a thorough understanding of the invention. It will be apparent to one skilled in the art that there are other embodiments of the invention that differ in details without affecting the essential nature thereof. Therefore the invention is not limited by that which is described in the specification, but only as indicated in the accompanying claims, with the proper scope determined only by the broadest interpretation of said claims.

Unless specifically defined otherwise in a particular context, the terms "cannabis flowers" and "cannabis seed" as used herein refer to the flowers and seeds of any species of plant in the genus Cannabis.

As used herein, the terms "extraction," and "extracting" refer to any process known in the art by which soluble components of plant material are separated from the plant by dissolving them in a solvent, and the term "extract" refers to any solution thus obtained. The terms as used herein do not imply any restriction or limitation on the details of the process or the specific content of the extract thus produced.

As used herein, the term "DMSO" refers to the chemical dimethylsulfoxide.

The basic composition disclosed in the present invention comprises two components, an extract of cannabis flowers (Cannabis Flos) and an extract of cannabis seed (Cannabis Semen). The details of the extraction processes are well-known to those skilled in the art. The general methods by which the extracts are obtained in the preferred embodiments are as follows.

In one embodiment of the invention, the cannabis flower extract is obtained by ethanol extraction of cannabis flowers. In a preferred embodiment of the invention, the cannabis flower extract is obtained by extraction by 95% ethanol derived from fermentation and repeated distillation of pomegranate juice (i.e. the juice of the fruit of Punica granatum). In a most preferred embodiment of the invention, the cannabis flower extract is obtained by extraction by 95% ethanol derived from fermentation and repeated distillation of pomegranate juice obtained from organically grown of dried flowers of Cannabis sp.

In a preferred embodiment of the invention, the cannabis seed extract is obtained by cold-pressing. In another preferred embodiment, the cannabis seed extract is obtained by supercritical fluid extraction using CO₂ as the solvent.

In a preferred embodiment of the invention, the cannabis flower extract is obtained from a hybrid plant of about 80% Cannabis indica and about 20% Cannabis sativa. In a most
preferred embodiment of the invention, the hybrid plants from which extracts are prepared are organically grown. In a preferred embodiment of the invention, the cannabis seed extract is obtained from seeds of *Cannabis sativa*. In a more preferred embodiment of the invention, the cannabis plants from which the seed extract is obtained are organically grown *Cannabis sativa*. In a most preferred embodiment of the invention, the seed extract is prepared from a genotype with a high concentration of gamma linolenic acid (GLA) in its oil. This genotype is preferred because these seeds provide a stronger synergistic effect when their extract is combined with cannabis flower extract. The exact origin of this synergistic effect remains obscure; it appears to originate from the unexpected benefit of the combined action of THC found in cannabis flower extract with at least one of the literally dozens of natural products (e.g. other cannabinoids, terpenoids, fatty acids, sterols, etc.) found in cannabis seed extract.

In a preferred embodiment of the invention, the ratio of cannabis flower extract to cannabis seed extract within the composition is composition between about 1:99 and about 99:1. In a more preferred embodiment of the invention, the ratio of cannabis flower extract to cannabis seed extract within the composition is composition between about 5:95 and about 20:80. In a most preferred embodiment of the invention, the cannabis seed extract is provided as a base comprising about 10% pomegranate seed oil, about 5% wheat kernel oil, and about 85% cannabis seed extract, and the ratio of cannabis flower extract to the base containing cannabis seed extract is about 5:95.

In another embodiment of the invention, the composition is compounded with an appropriate vehicle in order to produce a transdermal ointment for direct application to the skin. In a preferred embodiment of the invention, the vehicle is Cera Alba (white beeswax). In one embodiment of the invention, the ointment comprises between about 5% and about 15% of the composition described above. In a preferred embodiment of the invention, the ointment comprises between about 8% and about 12% of the composition described above. In a most preferred embodiment of the invention, the ointment comprises about 9% of the composition described above.

In another embodiment of the invention, the ointment further comprises DMSO. The DMSO is added in order to facilitate transdermal penetration of the composition into subdermal tissues. In one embodiment of the invention, the ointment comprises between about 1% and about 25% DMSO. In a preferred embodiment of the invention, the ointment comprises between about 5% and about 15% DMSO. In a most preferred embodiment of the invention, the ointment comprises about 10% DMSO.
In further embodiments of the invention, the composition is provided in a form adapted for other parenteral uses including, as non-limiting examples, intravenous, nasopharyngeal, and inhalation.

The composition and ointment described above are designed to treat, lessen the effects of, and/or palliate the symptoms of a number of conditions characterized by inflammation of tissues. As described in detail in the examples presented below, these conditions include, but are by no means limited to, psoriasis, psoriatic arthritis, atopic dermatitis, and rheumatoid arthritis.

The present invention also provides a method for preparing a composition for the treatment of a condition characterized by inflammation of tissues. The method comprises the steps of (a) obtaining cannabis flower extract; (b) obtaining cannabis seed extract; and (c) mixing said cannabis flower extract and said cannabis seed extract in a predetermined ratio until a homogeneous composition is obtained. This general method will produce any of the embodiments of the composition described above, according to the ratio of the two extracts, the specific cannabis plants, and specific extraction method used.

The present invention also provides a method for preparing a transdermal ointment for the treatment of a condition characterized by inflammation of tissues. The method comprises the steps of (a) obtaining a composition for treatment of a condition characterized by inflammation of tissues as defined above and (b) compounding a said composition with a vehicle in a predetermined ratio until a homogeneous ointment is obtained. An additional embodiment of the method includes the step of adding a predetermined quantity of DMSO to the vehicle in order to prepare a transdermal ointment with increased ability to penetrate to subdermal tissues. With appropriate choices of ratio of cannabis flower extract to cannabis seed extract, specific cannabis plants, vehicle, and amount of DMSO, any of the embodiments of the transdermal ointment described above can be prepared.

**Example 1**

Presented in this example is a typical method (given for illustrative purposes only) of cannabis flower extract as used in the invention herein disclosed. Flowers of the Erez hybrid of Cannabis indica / Cannabis sativa were carefully picked at maturity and manually trimmed with steel scissors to remove leaves. The flowers were then immediately placed in an opaque plain brown paper bag and wrapped up by the bag’s own paper body. The wrapped bag was then left in a room at ambient temperature for at least two weeks and most preferably for three weeks at which time the flowers have surrendered over 80% of their fresh weight as humidity and are quite dry to the touch. The whole completely dry trimmed
flowers are then weighed and 40 grams of material are placed in a dry, clean 500 ml glass bottle. This requires some little nudging but does not require outright pressing or crushing. Then 95% ethanol which is prepared from 9 successive distillations of a fermented organically grown pomegranate juice, peel, leaf and flower preparation that is obtained from Punisyn Pharmaceuticals, Ltd., Haifa, Israel is added to the jars such that the alcohol level is nearly to the top and covers all the dried flowers. In practice, this comes to 450 ml of the pomegranate alcohol which is added to the bottle containing 40 grams of dried Cannabis Flos. The metal screwcap is then adhered to the bottle tightly and it is left alone in a dark place for at least one week, and more preferably for two weeks, and most preferably for six months.

Example 2
Presented in this example (for illustrative purposes only) is a typical preparation of the ointment herein disclosed. Two grams of Cera Alba are placed in a stainless steel basin which is connected to a double boiler apparatus so that the vessel is heated solely or mainly by the steam rising from an electric heating element under the double boiler. To the Cera Alba are added 1 ml wheat kernel extract (purchased from Tamar Marketing in Rishon L’Tzion Israel), 2.5 ml pomegranate seed extract (obtained by cold-press from seeds of Punica granatum, obtained from Punisyn Pharmaceuticals, Ltd., Haifa, Israel and kept at 4 degrees C in the lab), 18 ml cannabis seed extract (obtained by cold-press from seeds of Cannabis sativa and purchased from Tamar Marketing in Rishon L’Tzion Israel; the oil had been properly handled, kept in a cool dark place in opaque bottles, and stored at 4 degrees C), and 50 ml cannabis flower extract, obtained as described in the previous example. Optionally, 2.5 ml of DMSO may be further added as a penetration enhancer. The double boiler is then engaged and the mixture allowed to be heated thus at 100 degrees C until all the ethanol is evaporated and the Cera Alba discs are completely liquified. The mixture is then gently stirred with the end of a sterile syringe and the mixture is taken up into sterile plastic syringes and allowed to cool. Once cool, the filled syringes should be stored at 4 degrees C.

Example 3
A 55 year old man had suffered from acute recurrent psoriatic arthritis in his right hand for several months. His right hand was tense, edematous and erythematous and he complained of severe pain. The ointment prepared as disclosed above was applied to the afflicted area and the patient instructed to lie down and relax. The patient slept for about 40 minutes.
Upon awakening, the patient reported that the pain had remitted by 95%; the swelling and erythema had reduced by about 70%.

Example 4
An 80 year old man of strong build was confined to bed for several months due to deteriorating mental status and functional inability to ambulate. Two communicating pressure ulcers, which emitted a pungent and rank odor, extended over a breadth of about 2.5 cm and a depth of about 0.5 cm on the superior buttock roughly over the hip. The patient's caretaker reported that the ulcers had been developing and expanding for two weeks prior to the start of treatment with the ointment disclosed herein. The area was thoroughly cleaned with a 3% solution of hydrogen peroxide. The ointment was then applied twice daily to the affected area and covered with a sterile dressing and adhesive tape. The caretaker reported that the ulcers were completely closed and healed within three days of the beginning of treatment.

Example 5
A 38 year old man suffered for 5 months from progressive pain in the left hind, aggravated on motion. Radiography revealed a deterioration in the joint socket of the hip. Non-steroidal anti-inflammatory drugs (NSAIDs) provided orally and topically in an ointment had afforded moderate relief for a couple of hours after each use, with gradual return of the pain. The patient then began a course of treatment with the ointment disclosed herein in place of the NSAIDs. The patient applied a small amount (~0.3 ml) of the ointment topically to the hip and massaged it in. The treatment was repeated on several occasions over the course of a week. The patient reported that the ointment provided better relief that lasted for a longer period of time than the previous course of treatment with NSAIDs had.
CLAIMS:
1. A composition for treating a condition, said composition adapted for application to the skin and said condition characterized by inflammation of tissue, wherein said composition comprises a mixture of cannabis flower extract and cannabis seed extract.
2. A composition according to claim 1, wherein the ratio of cannabis flower extract to cannabis seed extract is between about 1:99 and about 99:1.
3. A composition according to claim 1, wherein the ratio of cannabis flower extract to cannabis seed extract is between about 20:80 and about 5:95.
4. A composition according to claim 1, wherein the ratio of cannabis flower extract to cannabis seed extract is about 5:95.
5. A composition according to claim 1, wherein said cannabis flower extract is obtained by extraction with ethanol.
6. A composition according to claim 1, wherein said cannabis flower extract is obtained by extraction of dried flowers of Cannabis sp. by ethanol.
7. A composition according to claim 1, wherein said cannabis flower extract is obtained from a hybrid plant of Cannabis indica and Cannabis sativa.
8. A composition according to claim 7, wherein said hybrid plant is about 80% Cannabis indica and about 20% Cannabis sativa.
9. A composition according to claim 6, wherein said ethanol is obtained from fermentation and distillation of fruits of Punica granatum.
10. A composition according to claim 9, wherein said Punica granatum is organically grown.
11. A composition according to claim 1, wherein said cannabis seed extract is obtained by supercritical fluid extraction by CO₂.
12. A composition according to claim 1, wherein said cannabis seed extract is obtained by cold pressing.
13. A composition according to claim 1, wherein said cannabis seed extract is obtained from seeds of Cannabis sativa.
14. A composition according to claim 13, wherein said Cannabis sativa is a genotype the seeds of which have a high gamma linolenic acid content.
15. A composition according to claim 13, wherein said Cannabis sativa is organically grown.
16. A composition according to claim 1, wherein said cannabis seed extract is provided in a base comprising about 85% cannabis seed extract, about 10% pomegranate seed oil, and about 5% wheat kernel oil.

17. A composition according to claim 16, wherein said composition comprises said cannabis flower extract and said base in a ratio of about 5:95.

18. A composition according to claim 1, wherein said condition is atopic dermatitis.

19. A composition according to claim 1, wherein said condition is psoriasis.

20. A composition according to claim 1, wherein said condition is psoriatic arthritis.

21. A composition according to claim 1, wherein said condition is rheumatoid arthritis.

22. A transdermal ointment for treating a condition characterized by inflammation of tissue, wherein said transdermal ointment comprises a composition according to claim 1 compounded with a vehicle.

23. A transdermal ointment according to claim 22, wherein said ointment comprises between about 5% and about 15% of said composition.

24. A transdermal ointment according to claim 22, wherein said ointment comprises between about 8% and about 12% of said composition.

25. A transdermal ointment according to claim 22, wherein said ointment comprises about 9% of said composition.

26. A transdermal ointment according to claim 22, wherein said vehicle is Cera Alba.

27. A transdermal ointment according to claim 22, further comprising DMSO.

28. A transdermal ointment according to claim 27, wherein said ointment comprises between about 1% and about 25% DMSO.

29. A transdermal ointment according to claim 27, wherein said ointment comprises between about 5% and about 15% DMSO.

30. A transdermal ointment according to claim 27, wherein said ointment comprises about 10% DMSO.

31. A transdermal ointment according to claim 22, wherein said condition is atopic dermatitis.

32. A transdermal ointment according to claim 22, wherein said condition is psoriasis.

33. A transdermal ointment according to claim 22, wherein said condition is psoriatic arthritis.

34. A transdermal ointment according to claim 22, wherein said condition is rheumatoid arthritis.
35. A method for producing a composition adapted for treatment of a condition characterized by inflammation of tissues, said method comprising the steps of:
   a. obtaining cannabis flower extract;
   b. obtaining cannabis seed extract; and,
   c. mixing said cannabis flower extract and said cannabis seed extract in a predetermined ratio until a homogeneous composition is obtained.
36. A method according to claim 35, wherein said predetermined ratio is between about 1:99 and about 99:1.
37. A method according to claim 35, wherein said predetermined ratio is between about 20:80 and about 5:95.
38. A method according to claim 35, wherein said predetermined ratio is about 5:95.
39. A method according to claim 35, wherein said step of obtaining cannabis flower extract further includes the additional step of extracting cannabis flowers with ethanol.
40. A method according to claim 39, wherein said step of obtaining cannabis flower extract further includes the additional step of obtaining dried flowers of Cannabis sp.
41. A method according to claim 35, wherein said step of obtaining cannabis flower extract further includes the additional step of extracting cannabis flowers obtained from a hybrid plant of Cannabis indica and Cannabis sativa.
42. A method according to claim 42, wherein said hybrid plant is about 80% Cannabis indica and about 20% Cannabis sativa.
43. A method according to claim 39, further comprising the additional steps of
   a. fermenting and distilling alcohol from fruits of Punica grantum; and
   b. using said alcohol in said step of extracting cannabis flowers.
44. A method according to claim 43, wherein said Punica grantum is organically grown.
45. A method according to claim 35, wherein said step of obtaining cannabis seed extract further comprises the step of extracting cannabis seeds using supercritical CO₂.
46. A method according to claim 35, wherein said step of obtaining cannabis seed extract further comprises the step of extracting cannabis seeds by cold pressing.
47. A method according to claim 35, wherein said step of obtaining cannabis seed extract further comprises the additional steps of
   a. obtaining seeds of Cannabis sativa; and
   b. producing an extract from said seeds.
48. A method according to claim 47, wherein said step of obtaining seeds of *Cannabis sativa* further comprises the additional step of obtaining seeds from a genotype of *Cannabis sativa* the seeds of which have a high gamma linolenic acid content.

49. A method according to claim 47, wherein said *Cannabis sativa* is organically grown.

50. A method according to claim 35, wherein said step of obtaining cannabis seed extract further comprises the additional step of preparing a base comprising about 85% cannabis seed extract, about 10% pomegranate seed oil, and about 5% wheat kernel oil.

51. A method according to claim 35, wherein said step of mixing said cannabis flower extract and said cannabis seed extract further includes the additional step of mixing said cannabis flower extract and said base in a ratio of about 5:95.

52. A method according to claim 35, wherein said condition is atopic dermatitis.

53. A method according to claim 35, wherein said condition is psoriasis.

54. A method according to claim 35, wherein said condition is psoriatic arthritis.

55. A method according to claim 35, wherein said condition is rheumatoid arthritis.

56. A method for producing a transdermal ointment adapted for the treatment of a condition characterized by inflammation of tissues, said method comprising the steps of:
   a. preparing a composition adapted for the treatment of a condition characterized by inflammation of tissues according to the method of claim 35; and,
   b. compounding said mixture with a vehicle in a predetermined ratio.

57. The method of claim 56, wherein said vehicle is Cera Alba.

58. The method of claim 56, wherein said predetermined ratio is between about 5:95 and about 15:85.

59. The method of claim 56, wherein said predetermined ratio is between about 8:92 and about 12:88.

60. The method of claim 56, wherein said predetermined ratio is about 9:91.

61. The method of claim 56, further comprising the additional step of adding a predetermined amount of DMSO to said vehicle.

62. The method of claim 61, wherein said predetermined amount of DMSO is between about 1% and about 25% of the total amount of vehicle.

63. The method of claim 61, wherein said predetermined amount of DMSO is between about 5% and about 15% of the total amount of vehicle.

64. The method of claim 61, wherein said predetermined amount of DMSO is about 10% of the total amount of vehicle.
### A. CLASSIFICATION OF SUBJECT MATTER

**IPC(8)**: A61K 36/00; A61K 36/18 (2010.01)

**USPC**: 424/725, 424/776, 424/778

According to International Patent Classification (IPC) or to both national classification and IPC

### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

**IPC**: A61K 36/00; A61K 36/18 (2010.01); USPC: 424/725, 424/776, 424/778

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Patents and NPL

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PubWest (US Pat, Pgpub, EPO, PJO: classification, keyword), Goop [Scholar];

search terms: cannabis, marijuana, cannabinoid, sativex, seed, flower, skin, dermatitis, psoriasis, arthritis, rheumatory, dmso, dimethyl sulfoxide, cere alba, white wax, pomegranate, wheat, punica granatum, organic, grown

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>WO 2009/039843 A2 (LEITZEL et al.) 02 April 2009 (02.04 2009), pg 1, 2, 5-9, 14-15, 17</td>
<td>1-8, 13, 15, 18-25, 27-42, 47, 49, 51-56, 58-64</td>
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<td>Y</td>
<td>US 2007/0122492 A1 (BEHR et al.) 31 May 2007 (31.05.2007), para [0001], [0014], [0077], [0084], [0135], [0148], [0149], [0166], [0196], [0205], [0209]</td>
<td>9-12, 14, 16, 17, 26, 43-46, 48, 50, 57</td>
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<td>Y, E</td>
<td>US 2010/0166891 A1 (SCHMIDT) 01 July 2010 (01.07.2010), entire document</td>
<td>1-64</td>
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* Further documents are listed in the continuation of Box C.

| 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 |
| 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 |
| 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 |
| K | Document member of the same patent family |

### Date of the actual completion of the international search

19 October 2010 (19.10.2010)

### Date of mailing of the international search report

29 oct 2010

### Authorized officer

Lee W. Young

PCT Helpdesk, 571-272-4300
PCT OSP, 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)
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<tr>
<td>A</td>
<td>KLEIN &quot;Cannabinoid-Based Drugs as Anti-Inflammatory Therapeutics.&quot; Nature Reviews Immunology [online], May 2005 [Retrieved on 2010-10-19], Vol 5, No 5, pp 400-411, Retrieved from the Internet &lt;URL <a href="http://www.nature.com/nri/index.html%3E">http://www.nature.com/nri/index.html&gt;</a></td>
<td>1-64</td>
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