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(54) Titre : INSECTIFUGE INODORE ET METHODE D'UTILISATION  
(54) Title: ODOURLESS INSECT REPELLANT AND METHOD OF USE

(57) **Abrégé/Abstract:**

An odourless and all natural insect repellent composition comprises effective amounts of active ingredients as an odourless oil, pepper, and optionally sulphur and diatomaceous earth for insect repellency. The composition also includes effective amounts of one or more emulsifiers for emulsifying components of the composition, and a skin emollient to enhance acceptance of the product onto a user's skin. The balance of the composition is made up of water.



**ABSTRACT**

An odourless and all natural insect repellent composition comprises effective amounts of active ingredients as an odourless oil, pepper, and optionally sulphur and diatomaceous earth for insect repellency. The composition also includes effective amounts of one or more emulsifiers for emulsifying components of the composition, and a skin emollient to enhance acceptance of the product onto a user's skin. The balance of the composition is made up of water.

## **ODOURLESS INSECT REPELLANT AND METHOD OF USE**

### **Field of the Invention**

The present invention is directed to an odourless insect repellent, and particularly to an odourless insect repellent that includes effective amounts of an odourless oil, pepper, one or more emulsifiers, a skin emollient, and optional ingredients of diatomaceous earth, a preservative, and sulphur, with the balance water.

### **Background Art**

In the prior art, numerous formulations have been proposed for insect repellency. A number employ artificial ingredients, including chemicals that many users are reluctant to apply directly to their skin.

Another problem with present day insect repellents is the odours that they include. These odours can be an attractant for insects, thus compromising the effectiveness of the particular insect repellent being used.

As such, there is a need to develop improved insect repellents, including those that do not contain harsh or unwanted chemical compounds and/or attract insects at the same time as repelling them. The present invention responds to this need with an insect repelling composition that is both odourless and all natural.

### **Summary of the Invention**

A first object of the present invention is an odourless insect repellent composition.

Another object of the invention is an odourless insect repellent composition that is made of all natural ingredients.

One other object of the invention is an improvement in repelling insects through the use of the inventive composition.

Other objects and advantages of the present invention will become apparent as a description proceeds.

In satisfaction of the foregoing objects and advantages, the present invention is directed to an insect repellent composition comprising effective amounts of an odourless oil, one or more emulsifiers, pepper, a skin emollient, and optional components of diatomaceous earth, sulphur, and one or more preservative, each in effective amounts for  
5 their intended purposes, with the balance being water.

In one embodiment, the skin emollient is preferably glycerine, and the odourless oil is mineral oil. The one or more emulsifiers can include sodium lauryl sulphate, octyl phenol ethoxylate, guar or xanthan gums, emulsion polymers or the like.

In preferred embodiments, the odourless oil is at least 1% by weight of the  
10 composition with a more preferred range of 3-5%. The pepper ranges in up to 0.04% by weight of the composition, with a more preferred range of between 0.01 and 0.03%. The skin emollient ranges from 0.05% to 1.0% by weight of the composition with a more preferred range of 0.075 to 0.15%. The emulsifier ranges from 1.0 to 5.0% by weight of the composition, with a more preferred range of 1.5 to 3.0% by weight.

15 The optional active ingredient of diatomaceous earth can be used in an effective amount for insect repellency, including ranging between about 0.01% by weight and up to 5% by weight. A more preferred range is between about 0.05% and 3% by weight. The optional sulphur ingredient can also be used in an effective amount to deter insects, including a range up to 1.0% by weight of the composition, with a preferred range being  
20 between 0.1 and 0.5% by weight. The optional preservative ingredient is also used in effective amounts for preserving the formulation, with preferred ranges including from 0.10 to 1.0% by weight, more preferred ranges being 0.15% to 0.5% with a most preferred target around 0.2-0.3%.

The invention is also an improvement in methods of repelling insects from human  
25 skin by application of an insect repellent formulation, whereby the inventive composition is used as the formulation. The application is especially useful in environments where odours of any type are a problem, e.g., hunting environments.

### Description Of The Preferred Embodiments

The present invention provides a significant advantage in the field of insect repellents by offering an all natural, and odourless repellent. The drawbacks of harmful chemicals are eliminated without compromising the repellent nature of the formulation.

5 In its broadest embodiment, the invention comprises at least two main active ingredients, an odourless oil and pepper. Each is used in effective amounts to achieve their intended purpose of insect repellency. The invention also includes inert or inactive ingredients as one or more emulsifiers, and a skin emollient, with the balance being water, each also used in effective amounts for their intended purpose. One or more preservatives  
10 can also be used. Optional active ingredients include diatomaceous earth and sulphur. The active and inactive ingredients are detailed below.

#### Active Ingredients:

While the broadest aspect of the invention uses the active ingredients in effective  
15 amounts for their intended purposes, the invention also contemplates preferred and more preferred embodiments, wherein the percentages of the active ingredients based on a weight percentage of the total composition are as follows:

##### Mineral or other odourless oil:

Preferably, the oil is 1.0% to up to an amount that either cannot be sprayed or could  
20 not be used in another medium such a cream or lotion, with a more preferred range of 3-5%.

##### Pepper:

Preferably, the pepper ranges between just above zero to up and 0.04% with a more preferred range being about 0.01-0.03%. Because of the strength of the pepper, very minute amounts can be used. Any type of pepper can be used, although red pepper or  
25 capsaicin is preferred.

##### Sulphur:

If used, it is preferred that sulphur be in an amount up to 1.0% with a more preferred range of 0.1 to 0.5%. The sulphur amount is controlled based on the desired odour emanation. Amounts less than about 0.25% sulphur are desired to maintain the odourless properties, with even less amounts such as up to 0.15%, up to 0.1% and up to 0.05% being  
5 even more preferred.

Diatomaceous Earth:

Diatomaceous earth can also be employed as part of the inventive composition in an effective amount to deter insects from landing on the treated area of the user. Given the sharp nature of the diatomaceous earth, insects find it irritating to come into contact with it.  
10 A preferred amount is at least 0.01% by weight with an upper limit being around 5.0% or where it became too difficult to apply such as by spraying. The diatomaceous earth can be any type that is readily available commercially.

Inert Ingredients:

15 The inventive composition also includes some inert ingredients in effective amounts as well. These inert ingredients include one or more emulsifiers to aid in emulsifying other ingredients in the composition. An effective amount of a skin emollient for assisting in the skin taking up the other ingredients is also included. The balance of the composition is water. An optional but effective amount of one or more preservatives can be employed as  
20 well.

In a preferred embodiment, the inert ingredients, in weight percent based on the total composition weight include:

One or more emulsifiers:

Emulsifiers can be included in the composition in a range of 1-5.0%, and a preferred  
25 range of 1.5-3.0%. Sodium lauryl sulphate or Triton X-100, an octyl phenol ethoxylate, are preferred emulsifiers, but virtually any emulsifier or combination of emulsifiers could work.

Other examples of emulsifiers include guar and xanthan gums, and various types of emulsifying polymers as would be known in the art.

Skin Emollient:

A skin emollient is used in a preferred amount of 0.05 to 1.0% with a more preferred  
5 range of 0.075 to 0.15%. A preferred emollient is glycerine, propylene glycol, or an equivalent.

Preservatives:

While the preservative can be used in an amount effective to preserve the formulation and resist bacterial growth, preferred ranges include from 0.10 to 1% by weight,  
10 more preferred ranges include 0.15% to 0.5% with a target of around 0.2-0.3%. Virtually any preservative can be employed in the formulation, with examples including those using propyl paraben, methyl paraben and diazolidinyl urea, e.g., Germaben II. Another specific preservative that can be used is Dantoguard® manufactured by Lonza Group Ltd., Muenchensteinerstrasse 38 CH-4002 Basel, Switzerland.

15 Water:

Water is added as a balance of the composition.

While the active and inert ingredients are described in terms of effective amounts, one target formula of the invention would include about 4.3% oil, 0.027% capsaicin, 2.0% of a emulsifier such as TRITON X-100 or sodium lauryl sulphate, 0.1% glycerine, 0.2% of the  
20 Dantoguard preservative, with the balance water. Again though, it should be understood that these percentages could vary within the ranges set forth above.

It should be understood that the list of ingredients above is a preferred listing and other materials could be used in substitution or exchange. For example, other types of odourless oils such as soybean oil, castor oil, canola oil, corn oil, etc. could be used.

25 The sulphur can be present as elemental sulphur or in a compound form such as sodium sulphate or the like. Another skin emollient rather than glycerine could be used such

as propylene glycol. While red pepper as capsaicin is preferred, other pepper varieties (black, white, etc) may also be used that have similar irritating characteristics.

The oil is desired to create a slick surface, which is undesirable from the insect's view point. Too little oil will not create this effect. Too much oil adds nothing to this effect, and may possibly dilute the effects of the other active and inactive ingredients. The pepper acts as an irritant to the insect. The glycerine acts as an emollient to make the repellent more acceptable to skin. The sulphur also has repellent properties. The emulsifier emulsifies the components in the aqueous base, particularly the active ingredients of pepper and sulphur.

Too much oil may also prevent spraying if this mode is used, but more oil could be used if a cream or lotion is used.

The present invention is an ideal insect repellent since it utilizes all natural components and is odourless. The lack of odour is important odour can be an attractant of insects. The odourless characteristic of the formulation is especially advantageous in hunting environments where insects tend to be prevalent. The insect repellent is highly effective during hunting since it does not introduce unwanted scents that could signal the presence of a potential predator to an animal. The repellent could be applied via a spray, using wipes or direct application as a liquid to one's skin. It could be used as a cream but with more oil and a wax or polymer to keep the components in suspension.

As such an invention has been disclosed in terms of preferred embodiments thereof, which fulfills each and every one of the objects of the invention as set forth above, and provides an improved odourless insect repellent and method of use.

Of course, various changes, modifications and alterations from the teachings of the present invention may be contemplated by those skilled in the art without departing from the intended spirit and scope thereof. It is intended that the present invention only be limited by the terms of the appended claims.

**CLAIMS:**

1. A sprayable aqueous odourless insect repellent composition consisting essentially of an effective amount of an odourless oil to create a slick surface to repel insects, an effective amount of pepper for insect repellency, an effective amount of one or more emulsifiers for emulsification of at least the amount of pepper, an effective amount of a skin emollient to enhance application of the composition onto a user's skin, with the balance being water, wherein the odourless oil is at least 1% by weight of the composition, the pepper ranges up to 0.04% by weight of the composition, the emulsifier ranges from 1.0 to 5.0% by weight of the composition, and the skin emollient ranges from 0.05% to 1.0% by weight of the composition.
2. The composition of claim 1, wherein the composition further comprises an effective amount up to 0.25% by weight of the composition of sulfur for insect repellency.
3. The composition of claim 1, further comprising a preservative in an effective amount for deterring bacterial contamination of the composition.
4. The composition of claim 1, wherein the odourless oil is mineral oil, the emulsifier is sodium lauryl sulfate or an octyl phenol ethoxylate, the pepper is capsaicin, and the skin emollient is glycerin or propylene glycol.
5. The composition of claim 1, wherein the odourless oil ranges between 3.0 and 5.0%.
6. The composition of claim 1, wherein the pepper ranges between 0.01 and 0.03%.
7. The composition of claim 2, wherein the sulfur ranges between 0.01 and 0.05%.
8. The composition of claim 1, wherein the skin emollient ranges between 0.075 and 0.15 %.
9. The composition of claim 1, further including an effective amount of diatomaceous earth for repelling insects due to contact between the diatomaceous earth and a part or parts of the insect.

10. The composition of claim 9, wherein the diatomaceous earth ranges between 0.01% and 5.0% by weight of the composition.

11. The composition of claim 3, wherein the preservative ranges between 0.1% and 1.0% by weight of the composition.