Abstract: The present invention relates, in general, to pediculicidal, pesticidal or insecticidal compositions containing carrot seed oil, which may be used against human or animal body louse, including head lice, body lice, and pubic lice as well as any arthropods, for example without being limited, to insects and arachnids. In one aspect, the present invention relates to pediculicidal compositions containing one or more plant essential oils and/or derivatives thereof to be used as a contact pesticide and repellent against human body louse. In another aspect, the present invention relates to a method for controlling human body louse by the application of pediculicidal effective amounts of the pediculicidal compositions to a locus where control of the lice is desired.

Title: PEDICULICIDAL, PESTICIDAL OR INSECTICIDAL COMPOSITIONS
PEDICULICIDAL, PESTICIDAL OR INSECTICIDAL COMPOSITIONS

FIELD OF THE INVENTION

The present invention relates, in general, to pediculicidal, pesticidal or insecticidal compositions containing carrot seed oil, which may be used against human or animal body louse, including head lice, body lice, and pubic lice as well as any arthropods, for example without being limited, to insects and arachnids. In one aspect, the present invention relates to pediculicidal compositions containing one or more plant essential oils and/or derivatives thereof to be used as a contact pesticide and repellent against human body louse. In another aspect, the present invention relates to a method for controlling human body louse by the application of pediculicidal effective amounts of the pediculicidal compositions to a locus where control of the lice is desired.

BACKGROUND OF THE INVENTION

Pests (invertebrates, insects, arachnids, larvae thereof, etc.) are annoying to humans and animals for a myriad of reasons. They have annually cost humans billions of dollars in crop and animal (livestock) production losses and in the expense of keeping them under control. For example, the losses caused by pests in agricultural environments include decreased crop yield, reduced crop quality, reduced livestock production, transmission of arthropod borne pathogens to humans and animals and increased harvesting costs.

However, it has become increasingly apparent that the widespread use of synthetic chemical pesticides has caused detrimental environmental effects that are harmful to humans and other animals. For instance, the public has become concerned about the amount of residual chemicals that persist in food, ground water and the environment, and that are toxic, carcinogenic or otherwise incompatible to humans, domestic animals and/or fish and bees. Moreover, some target pests have even shown an ability to develop resistance to many commonly used synthetic chemical pesticides. In recent times, regulatory guidelines have encouraged a search for potentially less dangerous pesticidal compositions via stringent restrictions on the use of certain synthetic pesticides. As a result, elimination of effective pesticides from the market has limited economical and effective options for controlling pests. As an alternative, botanical pesticides are of great interest because they are natural pesticides, i.e.; toxicants
derived from plants that are safe to humans, animals and the environment.

The problem is even more evident with respect to the treatment of human body louse, where the treatment of children and other humans demand certain safety attributes. Each year over 10 million Americans are affected by head lice (pediculosis) alone. Head lice are spread through direct contact or the sharing of certain household items and clothing. Many health professionals and parents are very concerned about the toxicity of pesticide shampoos, especially those containing Lindane. Furthermore, recent research indicates that head lice are becoming resistant to permethrin or pyrethrin shampoos, two current treatments for the problem.

Lice are a menace to human, not only because of their blood feeding, but also because of their ability to transmit pathogens. The human body louse, Pediculus humanus transmits the causative agent of epidemic typhus. The human head louse (Pediculus humanus capitis) is virtually indistinguishable from the human body louse on the basis of morphological characters and life cycle. Human head lice typically infest the scalp and head region. Females attach their eggs to the base of individual hairs. Transmission of lice occurs by person-to-person contact and via shared objects such as combs, brushes, head-bones, and caps. School-age children are at high risk because they are often more likely to share such items. Following the egg stage, there are three nymphal instars the last of which moults to an adult. The egg stage lasts for 4-15 days and each nymphal instar for 3-8 days; adults live for up to 35 days and bite every 3-6 hours. A single louse can lay up to 6 eggs per day.

Accordingly, there is a need for novel and effective pesticidal compositions, containing no synthetic pyrethroids, chlorinated hydrocarbons, organophosphates, carbamates and the like, to be used against human and animal louse. In addition, there is a need for a method of treating the skin and hair, etc. of humans to kill and/or repel human body or head louse.
SUMMARY OF THE INVENTION

In an embodiment of the invention there is provided an insecticidal or pesticidal composition for killing or controlling or repelling arthropods, the composition comprising an acceptable carrier and a carrot seed oil.

In another embodiment of the invention, there is provided a pediculicidal composition for killing or controlling a louse, the composition comprising an acceptable carrier and a carrot seed oil.

In another embodiment of the invention, there is provided a method for killing or controlling a louse, comprising the steps of applying to a louse or locus where control of a louse is desired, a pediculicidal/ovicidal effective amount of a composition comprising an acceptable carrier and carrot seed oil.

In another embodiment of the invention, there is provided a method for killing, repelling or controlling a louse, comprising the steps of applying to a louse or locus where control of a louse is desired, a pediculicidal/ovicidal effective amount of a composition comprising an acceptable carrier and a carrot seed oil.

In another embodiment of the invention, there is provided a method for killing, repelling or controlling a louse, on a body or a head of a subject comprising the steps of applying to a louse a pediculicidal/ovicidal effective amount of a composition comprising an acceptable carrier and a carrot seed oil.

In another embodiment of the invention, there is provided a composition for use for the manufacturing of a composition or a medicament for killing, repelling or controlling a louse on a subject.

DETAILED EMBODIMENTS OF THE INVENTION

In one embodiment of the invention there is provided a composition for use against a human body louse.
In another embodiment of the invention, there is provided a composition comprising carrot seed oil or derivative thereof as a contact pesticide in topical applications for the control of a human or animal body or head louse.

In another embodiment of the invention, there is provided a method of treating a locus where pest control is desired, such as clothes, bedding, sheets, pillows, etc.

In another embodiment of the invention, there is provided a safe, non-toxic pesticidal composition and method that will not harm mammals or the environment.

In another embodiment of the invention, there is provided a safe pesticidal composition that can be applied before detection of a human or animal body or head louse, as a repellent, such as shampoos, sprays, lotion, paste and the like.

The above and other objects are accomplished by the present invention, which is directed to pediculicidal/ovicidal compositions comprising at least one plant essential oil and/or a derivative thereof, natural or synthetic, in admixture with suitable carriers. In addition, the present invention is directed to a method for controlling a human body louse by applying a pediculicidal/ovicidal effective amount of the above pediculicidal/ovicidal compositions to a locus where pest control is desired.

The main chemical components of carrot seed oil are acetic, a-pinene, b-pinene, geraniol, carotol, asorone, limonene, a-tripinen, b-bisabolene, caryophyllene, b-elemene and daucol.

In an embodiment of the invention the carrot seed oil is diluted between 1:2 to 1:10. In another embodiment, the carrot seed oil is diluted between 1:10 to 1:100.

As these plant essential oil compounds are known and used for other uses, they may be prepared by a skilled artisan by employing known methods.

Use of compositions of the present invention generally results in 100% mortality on contact, along with good repellency and residual control. As such, they are
advantageously employed as without limitation, shampoos, hair gels, body creams, lotions, conditioner, paste, spray, foam, cream, emulsion or paste and other topical applications for the treatment of head lice, body lice, and pubic lice. They may also be used in combination with other pediculicidal/ovicidal active compounds, to increase efficacy and/or reduce toxicity, generally making conventional pesticides more acceptable.

The term "carrier" as used herein means a solid or fluid material, which may be inorganic or organic and of synthetic or natural origin, with which the active compound is mixed or formulated to facilitate its application to the skin or hair or other object to be treated, or its storage, transport and/or handling. In general, any of the materials customarily employed in formulating pesticides, herbicides, pediculicides, ovicidices or fungicides, are suitable. The pediculicidal/ovicidal compositions of the invention may be employed alone or in the form of mixtures with such solid and/or liquid dispersible carrier vehicles and/or other known compatible active agents such as other pesticides, or pediculicides, acaricides, nematicides, fungicides, bactericides, herbicides, fertilizers, growth-regulating agents, etc., if desired, or in the form of particular dosage preparations for specific application made therefrom, such as solutions, emulsions, suspensions, powders, pastes, and granules which are thus ready for use. The pesticidal compositions of the present invention can be formulated or mixed with, if desired, conventional inert pesticide diluents or extenders of the type usable in conventional pesticide formulations or compositions, e.g. conventional pesticide dispersible carrier vehicles such as gases, solutions, emulsions, suspensions, emulsifiable concentrates, spray powders, pastes, soluble powders, dusting agents, granules, foams, pastes, tablets, aerosols, natural and synthetic materials impregnated with active compounds, microcapsules, and formulations used with burning equipment, such as fumigating cartridges, fumigating cans and fumigating coils, as well as ULV cold mist and warm mist formulations, etc.

Formulations containing the pediculicidal/ovicidal compositions of the present invention may be prepared in any known manner, for instance by extending the pediculicidal/ovicidal compositions with conventional pesticide dispersible liquid diluent carriers and/or dispersible solid carriers optionally with the use of carrier vehicle assistants, e.g. conventional pesticide surface-active agents, including
emulsifying agents and/or dispersing agents, whereby, for example, in the case where water is used as diluent, organic solvents may be added as auxiliary solvents. Suitable liquid diluents or carriers include water, petroleum distillates, or other liquid carriers with or without surface active agents. The choice of dispersing and emulsifying agents and the amount employed is dictated by the nature of the composition and the ability of the agent to facilitate the dispersion of the pediculicidal/ovicidal compositions of the present invention. Non-ionic, anionic, amphoteric, or cationic dispersing and emulsifying agents may be employed, for example, the condensation products of alkylene oxides with phenol and organic acids, alkyl aryl sulfonates, complex ether alcohols, quaternary ammonium compounds, and the like.

Liquid concentrates may be prepared by dissolving a composition of the present invention with a solvent and dispersing the pediculicidal/ovicidal compositions of the present inventions in water with the acid of suitable surface active emulsifying and dispersing agents. Examples of conventional carrier vehicles for this purpose include, but are not limited to, aerosol propellants which are gaseous at normal temperatures and pressures, such as Freon; inert dispersible liquid diluent carriers, including inert organic solvents, such as aromatic hydrocarbons (e.g. benzene, toluene, xylene, alkyl naphthalenes, etc.), halogenated especially chlorinated, aromatic hydrocarbons (e.g. chloro-benzenes, etc.), cycloalkanes, (e.g. cyclohexane, etc.), paraffins (e.g. petroleum or mineral oil fractions), chlorinated aliphatic hydrocarbons (e.g. methylene chloride, chloroethylenes, etc.), alcohols (e.g. methanol, ethanol, propanol, butanol, glycol, etc.) as well as ethers and esters thereof (e.g. glycol monomethyl ether, etc.), amines (e.g. ethanolamine, etc.), amides (e.g. dimethyl formamide etc.) sulfoxides (e.g. dimethyl sulfoxide, etc.), acetonitrile, ketones (e.g. acetone, methyl ethyl ketone, methyl isobutyl ketone, cyclohexanone, etc.), and/or water; as well as inert dispersible finely divided solid carriers such as ground natural minerals (e.g: kaolins, clays, vermiculite, alumina, silica, chalk, i.e. calcium carbonate, talc, attapulgite, montmorillonite, kieselguhr, etc.) and ground synthetic minerals (e.g. highly dispersed silicic acid, silicates, e.g. alkali silicates, etc.).

Surface-active agents, i.e., conventional carrier vehicle assistants, that may be employed with the present invention include, without limitation, emulsifying agents, such as non-ionic and/or anionic emulsifying agents (e.g. polyethylene oxide esters of
fatty acids, polyethylene oxide ethers of fatty alcohols, alkyl sulfates, alkyl sulfonates, aryl sulfonates, albumin hydrolyzates, etc. and especially alkyl arylpolyglycol ethers, magnesium stearate, sodium oleate, etc.); and/or dispersing agents such as lignin, sulfite waste liquors, methyl cellulose, etc.

In the preparation of wettable powders, dust or granulated formulations, the active ingredient is dispersed in and on an appropriately divided carrier. In the formulation of the wettable powders the aforementioned dispersing agents as well as lignosulfonates can be included. Dusts are admixtures of the compositions with finely divided solids such as talc, attapulgite clay, kieselguhr, pyrophyllite, chalk, diatomaceous earth, vermiculite, calcium phosphates, calcium and magnesium carbonates, sulfur, flours, and other organic and inorganic solids which act as carriers for the pesticide. These finely divided solids preferably have an average particle size of less than about 50 microns. Thus, the contemplated are formulations with solid carriers or diluents such as bentonite, fuller earth, ground natural minerals, such as kaolins, clays, talc, chalk, quartz, attapulgite, montmorillonite or diatomaceous earth, vermiculite, and ground synthetic minerals, such as highly-dispersed silicic acid, alumina and silicates, crushed and fractionated natural rocks such as calcite, marble, pumice, sepiolite and dolomite, as well as synthetic granules of inorganic and organic meals, and granules of organic materials such as sawdust, coconut shells, corn cobs and tobacco stalks. Adhesives, such as carboxymethyl cellulose, natural and synthetic polymers, (such as gum arabic, polyvinyl alcohol and polyvinyl acetate), and the like, may also be used in the formulations in the form of powders, granules or emulsifiable concentrations.

If desired, colorants such as inorganic pigments, for example, iron oxide, titanium oxide and Prussian Blue, and organic dyestuffs, such as alizarin dyestuffs, azo dyestuffs or metal phthalocyanine dyestuffs, and trace elements, such as salts of iron, manganese, boron, copper, cobalt, molybdenum and zinc may be used.

In commercial applications, the present invention encompasses carrier composition mixtures in which the carrot seed oil is present in an amount substantially between about 0.01-95% by weight, or in another embodiment 0.5-90% by weight, of the mixture, whereas carrier composition mixtures suitable for direct application or field
application generally contemplate those in which the carrot seed oil is present in an amount substantially between about 0.0001-10%, by weight of the mixture.

The instant formulations or compositions may be applied in any suitable usual manner, for instance by shampooing, rubbing, spreading, spraying, atomizing, vaporizing, scattering, dusting, watering, squirting, sprinkling, pouring, fumigating, and the like. The method for controlling human head/body louse comprises applying the composition of the invention, ordinarily in a formulation of one of the aforementioned types, to a locus or area to be protected from the human head/body louse. The compound, of course, is applied in an amount sufficient to effect the desired action. This dosage is dependent upon many factors, including the targeted pest, the carrier employed, the method and conditions of the application, whether the formulation is present at the locus in the form of a shampoo, hair gel, cream, or body lotion, an aerosol, or as a film, or as discrete particles, the thickness of film or size of particles, and the like. Proper consideration and resolution of these factors to provide the necessary dosage of the active compound at the locus to be protected are within the skill of those versed in the art.

The carrier can be any medium having the required lipophilicity and thickness, such as ointments, emulsions and suspensions. For example, suitable lipophilic carriers can include ointments such as oleaginous ointments, water-in-oil emulsion ointments, absorption ointments and inert ointments. Water soluble ointments (e.g., polyethylene ointment and carbowax) are not suitable because they are not lipophilic. Other suitable carriers can include emollients, creams, gels and pastes. These can also be called numerous other names such as night creams, lubricant creams, moisturizing creams, cold creams, emollient creams, and transparent creams. Other suitable carriers can include complex emulsion systems in which there is a multiple phase dispersion. The lipophilic carrier usually contains one or more oils, and in some embodiments it contains greater than about 50% oil. One preferred mixture of oils is petrolatum (also called mineral jelly) mixed with liquid petrolatum (also called mineral oil). Mineral oil is unsuitable alone because it is not thick enough. However, mineral oil mixed with a thickener such as wax can be used as the carrier if suitably thickened. Mineral oil can be gelled, for example, with the addition of a polyethylene, producing a soft material resembling white petrolatum. The carrier can be thickened by the addition of
any suitable thickener such as waxes, gums, clays, corn starch, or sorbitol. Other suitable oils for use in the carrier, if suitably thickened, include triglycerides such as caprylic/capric triglyceride, and isopropyl myristate.

The carrier may also include a surfactant effective to allow the topical preparation to be washed out of the hair. The thickness of the carrier makes it very difficult to wash out of the hair without the addition of the surfactant. Preferably, the topical preparation can be substantially washed out of the hair with two washings. Some specific examples of suitable surfactants include polysorbate 60, oleth-5, oleth-10, and ceteareth-20. The surfactant preferably comprises a mixture of a hydrophilic surfactant and a lipophilic surfactant. For example, the surfactant mixture can include a polysorbate such as Tween 80 and a sorbitan ester such as Span 80. Other polysorbates such as Tween 20 or Tween 40 could be used in place of the Tween 80. Another example of a suitable surfactant mixture is a polyethylene monostearate and a glycerol monostearate. In an embodiment of the invention, the surfactant used is a nonionic surfactant to avoid any interference of the surfactant with the pediculicide. In an embodiment of the invention, the surfactant is incorporated in an amount within a range of from about 1% to about 30% surfactant by weight of the carrier. In an embodiment of the invention, the surfactant is incorporated in an amount within a range of from about 10% to about 20% surfactant by weight of the carrier.

The carrier can also include a wide variety of optional ingredients. A preferred optional ingredient is an attractant for the head lice, such as ammonia. An attractant may be helpful because lice tend to flee the scalp before the scalp hair can be totally saturated with the topical preparation, especially the small nymph stages of the lice. The attractant would thus reduce the chance of later reinestation or fomite transmission of any louse that might try to flee during application of the topical preparation. The lipophilic carrier by itself is believed to attract the head lice because the lice are dependent on the presence of oils (such as scalp oils) to avoid dehydration. Other optional ingredients include an antioxidant such as tocopherol, a preservative such as methylparaben or propylparaben, glycerine, and sorbitol.

In an embodiment of the invention another killing agent may be admixed in the carrier includes any material effective in killing the lice. Preferably, the additional killing
agent is an insecticide. The following insecticides, as well as others not listed, are suitable for use in the topical preparation: gamma benzene hexachloride, malathion, permethrin, pyrethrin, piperonyl butoxide, ivermectin, moxidectin, other macrocyclic lactones such as compound F28249, doramectin, pyrantel pamoate, fenbendazole, oxibendazole, benzimidazoles, thiabendazole, abamectin, avermectin, carboxyl, DDT (chlorophenothene), cromiton, benzyl benzoate, temephos, coumaphos, diazinon, sumithrine, fluorescein, pyrantel embonate, carbophenothon, chlorfenvinphos, crot oxyphos, fenitrothion, derris, bromocyclen, dfluubenzuron, organophosphates, organochlorines, hexachlorocyclohexanes, crot oxophos (plus dichlorvos), stirofos, tetrachlorvinphos, dioxathion, phosmet, bromocyclen, famphur, fen thion, methoxychlor, toxophene, trichlorfon, cypermethrin, bioallethrin, cyanosubstituted pyrethroid, phenothrin, pirimiphos methyl, carbaryl, propoxur, temephos, nicotine, pralidoxine, parathion, and natural oils such as coconut oil, anise, ylang ylang, garlic and lavender. Preferably, the insecticide is lipophilic so that it can more readily pass through the lipophilic membranes surrounding the louse larva in the egg. Some examples of preferred killing agents are botanical agents (e.g., pyrethrin, anise, ylang ylang), synthetic derivatives of botanical agents (e.g., permethrin), and chemical insecticides (e.g., organochorines, organophosphates, carbamates, anti-cholinesterases). It is preferred to use insecticides that are allowed on formulary by the FDA. The amount of pediculicide in the topical preparation is usually within a range of from about 0.5% to about 40% pediculicide by weight of the topical preparation. The pediculicide can usually be simply mixed into the topical preparation.

In an embodiment of the invention, the concentration of killing agent in the topical preparation, and the frequency of application of the killing agent, are not greater than conventionally utilized in lice therapeutics. Advantageously, the lipophilic carrier of this invention allows the option of using a reduced concentration of killing agent to effectively kill the head lice. In other words, the concentration of killing agent in the topical preparation can be less than the concentration previously required for therapeutic action. Consequently, pediculicide can be used that were not previously allowed, or that were previously discontinued as requiring too high a topical dosage. The reduced concentration reduces the concern about toxicity of the insecticide, and reduces the problem of the head lice becoming tolerant to the insecticide. The topical
preparation is not limited to concentrations of killing agent, which are not greater than previously used concentrations. For example, if a higher concentration of an insecticide is approved for over-the-counter or prescription use, it may be desirable to use the higher concentration to maximize the effectiveness of the topical preparation.

The topical therapy involves applying the topical preparation to dry scalp hair infested with head lice. The patient is instructed to leave the topical preparation on the scalp hair at least about 15 minutes to allow time for the insecticide to kill the adult lice and lice eggs. Preferably, the topical preparation is left on the scalp hair at least about one hour, and more preferably at least about 3-4 hours. In an embodiment of the invention, the composition is administered for at least 12 hours. In another embodiment of the invention, the composition may be administered for at least 24 hours. In an embodiment of the invention, the topical preparation is left on the scalp hair overnight. The topical preparation can be held on the scalp hair by use of a shower cap or other suitable containment device.

It is noted that the administration of the carrot seed oil for long period is harmless and even beneficial because carrot seed oil improves skin tone and elasticity, and moistens dry skin. It deters wrinkles, dermatitis, eczema, rashes and skin discoloration, and is used to treat precancerous skin conditions and ulcerated skin.

The pediculicidal/ovicidal compositions and methods of the present invention are effective against different species of human body louse, including head louse, body louse, pubic louse and animal louse such as the cattle tail louse Haematopinus quadripertusus, and it will be understood that the body louse exemplified and evaluated in the working Examples herein is representative of such a wider variety.

In an embodiment of the invention, the composition described herein is used for the manufacturing of a composition for the treatment of scabies in a subject.

A method of treating scabies in human and non human subjects is provided herein comprising the steps of applying to the subject an effective amount of a composition of the invention which comprises an acceptable carrier and a carrot seed oil. The
scabies is caused by mites from Sarcoptes species). There are species which affect
humans (e.g. Sarcoptes scabiei) and species which affect animals.

In another embodiment of the invention human and animals, such as without
limitation dogs, may also be infected with Demodex canis which causes mange. The
composition described herein is also used for treating this condition.

EXAMPLES

Example 1

Experimental procedures

Preparation of the carrot-seed oil:

Carrot-seed oil is distilled from the seed by steam distillation or cold pressing which
avoids losing some of the volatile compounds.

Oil Extraction & Production carrot seeds

1. Storage of oil seeds
2. Cleaning of oil seeds
3. Removing the husk or seed coating and separating the seeds from the chaff
4. Heating the seed
5. Extracting oil with an oil press, expeller or mortar & pestle
6. Extracted oil purification
7. Storing the purified oil

Essential oils may be derived from plants with the following process

- Hydro distillation, also known as water distillation, is a process in which
water and plant material is boiled together in a common tube.

- Steam distillation uses dry steam to vaporize and extract the oil. Steam
distillation is used by commercial ventures seeking to process large quantities
of essential oils economically.
• Solvent extraction uses organic solvents to extract both essential and oleoresins which are then separated.
• Supercritical extraction is another form of solvent extraction in which carbon dioxide is used under extremely high pressure to extract both essential oils and oleoresins.

Measurement of the pediculicidal activity of the carrot seed oil:
Carrot-seed oil in various dilutions has been evaluated for contact toxicity. Body lice are the test model insect for all human body louse testing, and are a necessary step in the proper evaluation of new products. Carrot-seed oil and dilutions thereof were applied to various surfaces. Body lice were then added to the surface and monitored for mortality.

The pediculicidal activity of carrot seed oil was tested in the laboratory on the human body louse according the following procedure: Body lice (Pediculus humanus humanus) were reared in the laboratory according to the method described by Cole (1966). For each test, fifty lice (ten males, ten females and thirty nymphs) were placed on a seven-centimeter white filter paper disc and exposed to one ml of the test substance, which was diluted with 40% ethyl alcohol. The lice were left in contact with the substance for 15 minutes. Following that they were removed from the test solution and washed with normal shampoo for 1 min and then with tap water for 1 min. After treatment, lice were transferred to a fresh filter paper disc and incubated overnight at optimum temperature and humidity (30°C ± 1°C; 50-60% RH). Mortality was determined after 24 hrs. As a negative control, lice were treated with 40% ethyl alcohol. Each formulation was tested in triplicate in three separate experiments:

Experimental Results

<table>
<thead>
<tr>
<th>Experiment 1</th>
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<tbody>
<tr>
<td>Formulation</td>
</tr>
<tr>
<td>Carrot seed oil</td>
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<td>Carrot seed oil</td>
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<td>Carrot seed oil</td>
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</table>
These data show that carrot seed oil may be used as a safe and effective alternative pesticide for control of human body louse.
As can be seen from the above discussion, carrot seed oil, even when diluted 10 times is markedly superior to treatment with ethyl alcohol which is known for control of human body louse.

Example 2

Measurement of the pediculicidal activity of the carrot seed oil in cattle tail louse:

Hair clippings infested with cattle tail louse *Haematopinus quadripertusus* were tested in plastic Petri-dishes in diameter of nine centimeter. One hundred eggs and lice clinging on the hair clippings were dipped into a carrot seed oil and inserted into each Petri-dish.

The results were as follows:

<table>
<thead>
<tr>
<th>Days post treatment</th>
<th>No. of live lice/eggs</th>
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<tr>
<td>4</td>
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</table>
These data show that carrot seed oil may be used as a safe and effective alternative pesticide for control of cattle tail louse.

Although illustrative embodiments of the invention have been described in detail, it is to be understood that the present invention is not limited to those precise embodiments, and that various changes and modifications can be effected therein by one skilled in the art without departing from the scope and spirit of the invention as defined by the appended claims.
WHAT IS CLAIMED IS:

1. A pediculicidal composition for killing, repelling or controlling a louse said composition comprising an acceptable carrier and carrot seed oil.

2. The composition of claim 1, wherein the louse is human head louse, human body louse, human pubic louse, cattle tail louse or animal's louse.

3. The composition of claim 1, wherein the carrot seed oil is diluted between 1:2 to 1:10.

4. The composition of claim 1, wherein the carrot seed oil is diluted between 1:10 to 1:100.

5. The composition of claim 1, in a form of a shampoo, conditioner, lotion, spray, foam, cream, emulsion or paste.

6. A method for killing, repelling or controlling a louse, comprising the steps of applying to a louse or locus where control of a louse is desired, a pediculicidal/ovicidal effective amount of a pediculicidal composition comprising an acceptable carrier and a carrot seed oil.

7. A method for killing, repelling or controlling a louse, on a body or a head of a subject comprising the steps of applying to a louse a pediculicidal/ovicidal effective amount of a composition comprising an acceptable carrier and a carrot seed oil.

8. Use of the composition of claim 1 for the manufacturing of a composition for killing, repelling or controlling a louse on a subject.

9. An insecticidal or pesticidal composition for killing or controlling or repelling arthropods, said composition comprising an acceptable carrier and carrot seed oil.
10. Use of the composition of claim 9 for the manufacturing of a composition for
the treatment of scabies in a subject.

11. A method of treating scabies in human and non human subjects comprising the
steps of applying to the subject an effective amount of a composition comprising an
acceptable carrier and a carrot seed oil.

12. Use of the composition of claim 9 for the manufacturing of a composition for
the treatment of mange in a subject.

13. A method of treating mange in human and non human subjects comprising the
steps of applying to the subject an effective amount of a composition comprising an
acceptable carrier and a carrot seed oil.