In this invention, we tested delta tocotrienol's effect on chlamydial infection in numerous normal white blood cells, cancer cells, and buffy coats of *Chlamydia*-positive human blood samples.

Summary Of The Invention

The invention relates to uses of Vitamin E to inhibit and prevent infection by *Chlamydia*. Additionally, the present disclosure~~invention~~ relates to the mechanism of action by Vitamin E, especially delta-tocotrienol, to interrupt the infection process of a *Chlamydia*.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using Vitamin E tocochromanol to inhibit, prevent, and disrupt the developmental cell cycle and infection of *Chlamydia*. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to inhibit, prevent, and disrupt the developmental cell cycle and infection of *Chlamydia*. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using delta-tocotrienol to inhibit, prevent, and disrupt the developmental cell cycle and infection of *Chlamydia*.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using Vitamin E tocochromanol to alleviate the effects of *Chlamydia*-related diseases. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to alleviate the effects of *Chlamydia*-related diseases. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using delta-tocotrienol to alleviate the effects of *Chlamydia*-related diseases.

In one aspect of the invention, there is provided the use of a tocotrienol for the preparation of a medicament for the treatment of a *Chlamydia* infection, wherein said tocotrienol is administered daily for at least one month to a mammal or avian to treat *Chlamydia*-associated disease selected from the group consisting of cardiovascular disease, hypertension, atherosclerosis, COX-I- and COX-II-induced inflammation, a sexually transmitted disease, a genital tract infection, arthritis, prediabetes, metabolic syndrome, diabetes, polycystic ovarian syndrome (PCOS), a respiratory tract infection, pneumonia, an ocular infection, a neurological disease, Alzheimer's disease, and multiple sclerosis.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using Vitamin E tocochromanol to reduce the quantity of chlamydial inclusions. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to reduce the quantity of chlamydial inclusions. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using delta-tocotrienol to reduce the quantity of chlamydial inclusions.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using Vitamin E tocochromanol to impede and suppress the initial infection by chlamydial EBs of host cells. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to impede and suppress the initial infection by chlamydial EBs of host cells. In another example ~~more~~

~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using delta-tocotrienol to impede and suppress the initial infection by chlamydial EBs of host cells.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using 5 μmol/L delta-tocotrienol to inhibit chlamydial development within the host cell. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using 10 μmol/L delta-tocotrienol to inhibit chlamydial development within the host cell. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using 20 μmol/L delta-tocotrienol to inhibit chlamydial development within the host cell. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using 30 μmol/L delta-tocotrienol to inhibit chlamydial development within the host cell. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using 40 μmol/L delta-tocotrienol to inhibit chlamydial development within the host cell.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using delta-tocotrienol several times to reduce the level of infection by *Chlamydia*. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using delta-tocotrienol 3 to 10 times to reduce the level of infection by *Chlamydia*. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using delta-tocotrienol more than 10 times to reduce the level of infection by *Chlamydia*. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using delta-tocotrienol repeatedly to reduce the level of infection by *Chlamydia*.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using delta-tocotrienol several times to inhibit re-infection of the host cell by chlamydial EBs. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using delta-tocotrienol 3 to 10 times to inhibit re-infection of the host cell by chlamydial EBs. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using delta-tocotrienol more than 10 times to inhibit re-infection of the host cell by chlamydial EBs. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using delta-tocotrienol repeatedly to inhibit re-infection of the host cell by chlamydial EBs.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to inhibit inclusion formation by 5%. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to inhibit inclusion formation by 10%. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to inhibit inclusion

formation by 15%. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to inhibit inclusion formation by 20%. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to inhibit inclusion formation by 25%. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to inhibit inclusion formation by 30%. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to inhibit inclusion formation by 40%. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to inhibit inclusion formation by 45%. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to inhibit inclusion formation by 50%. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to inhibit inclusion formation by 60%. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to inhibit inclusion formation by 75%. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to inhibit inclusion formation by 90%.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using Vitamin E tocochromanol. In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol for at least one day. In another example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol for at least three days. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol for more than three days.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol is effective in humans against *Chlamydia* as represented in circulating WBCs, including neutrophils, monocytes, lymphocytes, eosinophils, and basophils.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to reduce the cholesterol level and chlamydial infection in hyperlipidemic patients, and rendered the chlamydial infection status negative.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using an agent that restricts cholesterol/lipids to restrict *Chlamydia* infection and growth.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to reduce *Chlamydia* infections in cancer patients.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to ward off pathogenic infections including *Chlamydia* via activation of antigen-presenting dendritic cells and T-lymphocytes.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to resist opportunistic chlamydial infection of hypertensive patients, and thereby reduce the patient's blood pressure.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to reduce cardiovascular risk factors associated with metabolic syndrome, and thereby reduce the risk of diabetes and concomitant or subsequent infection by *Chlamydia*.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of application of tocotrienol by aerosol sprays (to reach respiratory tract airways), oral ingestion via softgels, tablets or capsules (to reach vascular-organistic systems), topical creams, douches, and lotions (to reach genital sites), and topical liquid drops (to reach ocular sites).

In another aspect of the invention, there is provided the use of a tocotrienol Vitamin E tocochromanol in the manufacture of a medicament for the treatment of an *Chlamydia* infection, wherein said medicament is to be administered daily for at least one month to a mammal in need of treatment; wherein the amount of the tocotrienol is a dose between 10 mg and 1000 mg per day, and wherein the tocotrienol treats the *Chlamydia* infection.

In another example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of application of tocotrienol by oral ingestion via softgels, tablets or capsules, and topical creams, douches, and lotions. In another example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of application of tocotrienol by oral ingestion via softgels, tablets or capsules. In one example~~embodiment~~ of the present disclosure~~invention~~ is drawn to a method of administering delta tocotrienol in a range from 10 to 1000 mg per day. In another example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of administering delta tocotrienol in a range from 20 to 500 mg per day. In an example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of administering delta tocotrienol in a range from 50 to 150 mg per day. In one example~~embodiment~~ of the present disclosure~~invention~~ is drawn to a method of treatment with delta tocotrienol of administering daily for one month. In an example ~~preferred embodiment~~ of the present disclosure~~invention~~ is drawn to a method of treatment with delta tocotrienol of administering daily for six months. In another example ~~more preferred embodiment~~ of the present disclosure~~invention~~ is drawn to a method of treatment with delta tocotrienol of administering daily for one year. In another example ~~more preferred embodiment~~ of the present disclosure~~invention~~ is drawn to a method of treatment with delta tocotrienol of administering daily until infection and inflammation due to *Chlamydia* is cleared.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol for respiratory tract infections by using an aerosol spray at a dosage of 1 spray per day. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol for respiratory tract infections by using an aerosol spray at a dosage of 2 sprays per day. In another example ~~more embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol for respiratory tract infections by using an aerosol spray at a dosage of 4 sprays per day.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol for genital tract infections by using an aerosol spray at a dosage of 1 application per day. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol for genital tract infections by using an aerosol spray at a dosage of 2 applications per day. In another example ~~more embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol for genital tract infections by using an aerosol spray at a dosage of 4 applications per day.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to reduce inflammation of vascular-organistic systems due to chlamydial infection by oral ingestion of 1 dose per day. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to reduce inflammation of vascular-organistic systems due to chlamydial infection by oral ingestion of 2 doses per day. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to reduce inflammation of vascular-organistic systems due to chlamydial infection by oral ingestion of 4 doses per day.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to reduce ocular infections and conjunctivitis due to chlamydial infection by applying liquid eye drops with 1 application per day. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to reduce ocular infections and conjunctivitis due to chlamydial infection by applying liquid eye drops with 2 applications per day. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol to reduce ocular infections and conjunctivitis due to chlamydial infection by applying liquid eye drops with 4 applications per day.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where the delta-to-gamma ratio of tocotrienols is 1:100 to 100:1. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where the delta-to-gamma ratio of

tocotrienols is 1:25 to 25:1. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where the delta-to-gamma ratio of tocotrienols is 1:10 to 10:1. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where the delta-to-gamma ratio of tocotrienols is 1:5 to 5:1. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where the delta-to-gamma ratio of tocotrienols is 1:1.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol comprising a mixture of annatto extract and a natural extract that is an appropriate spectrum. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where more than 50% of the tocotrienols are delta-T3 and gamma-T3. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where more than 50% of the tocotrienols are delta-T3. In another example ~~most preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where it is tocopherol-free.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where the C5 unsubstituted tocotrienols are >60%, and tocopherols are <15%. In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where the C5 unsubstituted tocotrienols are >70% C5 unsubstituted tocotrienols and <10% tocopherols. In an example ~~more preferred one embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where the C5 unsubstituted tocotrienols are >80% C5 unsubstituted tocotrienols and <5% tocopherols.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where the method of using tocotrienol is tocopherol-free with >98% tocotrienols, and tocotrienols are predominantly delta-T3 and gamma-T3. In an example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where the tocotrienol is tocopherol-free with >98% tocotrienols and tocotrienols are predominantly delta-T3.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol comprising annatto extract where C5 unsubstituted tocols inhibit surface chemotactic bioactive materials (CBM). In an example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol comprising annatto extract where annatto C5 unsubstituted T3 inhibit surface chemotactic bioactive materials. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is

drawn to a method of using tocotrienol comprising annatto extract where annatto C5 unsubstituted T3 inhibit surface chemotactic bioactive materials and prevent the tether or adhesion of circulating monocytes and leucocytes onto stationary endothelia. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol comprising annatto extract where annatto C5 unsubstituted T3 inhibit surface chemotactic bioactive materials and prevent the tether or adhesion of circulating monocytes and leucocytes onto stationary endothelia that cause the loss of vasculature integrity. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol comprising annatto extract where annatto C5 unsubstituted T3 inhibit surface chemotactic bioactive materials and prevent the tether or adhesion of circulating monocytes and leucocytes onto stationary endothelia that cause the loss of vasculature integrity, and prevent micro- and macro-vascular diseases, and atherosclerosis. In another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol comprising annatto extract where annatto C5 unsubstituted T3 inhibit CBM and prevent pathological events selected from the group consisting of chemotaxis, vasoconstriction, hypercoagulation, glycoxidation and oxidized LDL by via HDL elevation.

In yet another aspect of the invention, there is provided the use of tocotrienol for preparation of a medicament for the treatment of an infection by *Chlamydia*, wherein said tocotrienol is administered in combination with at least one agent selected from the group consisting of a statin, a bioflavonoid, a polyphenolic, a polymethoxylated flavone, a plant sterol, a oryzanol, a policosanol, a B vitamin, Coenzyme Q10 (CoQ10), an omega 3 fatty acid, a lecithin, garlic, a gugul lipid, an insoluble fiber, a soluble fiber, a soy protein, a chitosan, a red yeast rice, and a mineral.

In one example~~embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where the tocotrienol is combined with other nutrients. In another example ~~preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol were the tocotrienol is combined with other nutrients, and the tocotrienol contains geranyl geraniol. In ~~a~~another example ~~more preferred embodiment~~ the present disclosure~~invention~~ is drawn to a method of using tocotrienol where the nutrient is selected from the group consisting of phytosterols, oryzanols, policosanols, pantethine, red yeast rice (Monascus), oat bran, garlic, gugul lipids, chitosan, soy protein (e.g., oligo- and poly-peptides, hydrolysates), CoQ10, carnitine, magnesium, chromium, potassium, calcium, D-tyrosine, fibers (insoluble and soluble types, including beta-glucans), omega-3s (DHAs and EPAs, ALAs), and lecithin.

In one example~~embodiment~~, the present disclosure~~invention~~ is drawn to a method of using geranyl geraniols and tocotrienols and it increases the de novo biosyntheses of all subsequent intermediate isoprenoid pool and distal products.

In one example~~embodiment~~, the present disclosure~~invention~~ is drawn to method of using tocotrienol containing geranyl geraniols that anabolically increases the endogenous de novo synthesis of CoQ10 via geranyl geraniols elongation/prenylation of side chain and conversely CoQ10 catabolically increases the endogenous de novo synthesis of geranyl geraniols via CoQ 10 beta-oxidation.

In one example~~embodiment~~, the present disclosure~~invention~~ is drawn to a method of supplementation, comprising the administering of a tocotrienol or a tocotrienol and geranyl geraniol, and reducing Chlamydia-induced blindness.

Detailed Description of the Preferred Embodiment

In one embodiment the method administers a tocotrienol, where the tocotrienol contains delta-tocotrienol and gamma-tocotrienol, and where the delta-to-gamma ratio of tocotrienols is 1:100 to 100:1. In a preferred embodiment the method administers an tocotrienol, where the tocotrienol contains delta-tocotrienol and gamma-tocotrienol, and where the delta-to-gamma ratio of tocotrienols is 1:25 to 25:1. In a more preferred embodiment the method administers an tocotrienol, where the tocotrienol contains delta-tocotrienol and gamma-tocotrienol, and where the delta-to-gamma ratio of tocotrienols is 1:10 to 10:1. In a more preferred embodiment the method administers an tocotrienol, where the tocotrienol contains delta-tocotrienol and gamma-tocotrienol, and where the delta-to-gamma ratio of tocotrienols is 1:5 to 5:1. In a more preferred embodiment the method administers an tocotrienol, where the tocotrienol contains delta-tocotrienol and gamma-tocotrienol, and where the delta-to-gamma ratio of tocotrienols is 1:1.

In one embodiment a method administers a tocotrienol, where the method of using tocotrienol is a mixture of an annatto extract and a natural extract, and where the mixture has standardized low levels of tocopherols. In a preferred embodiment the method administers a tocotrienol, where the method of using tocotrienol is a mixture of an annatto extract and a natural extract, and where the standardized level of tocopherols is $\leq 50\%$. In a more preferred embodiment the method administers a tocotrienol, where the method of using tocotrienol is a mixture of an annatto extract and a natural extract, and where the standardized level of tocopherols is $\leq 20\%$. In a more preferred embodiment the method