CLAIMS

What is claimed is:

1. An antimicrobial formulation comprising:

an effective amount of an active component, ~~selected from the group consisting of a monoterpenoid and a polyphenol~~ the active component selected from the group consisting of thymol, eugenol or carvacrol;

a non-ionic or anionic surfactant wherein the weight ratio of active ingredient to the non-ionic or anionic surfactant is about 10:1 to about 5:1; an organic co-solvent; and water,

wherein the formulation is an emulsion having a mean emulsion droplet size from about 25 nm to about 3000 nm.

2. The antimicrobial formulation of claim 1, wherein the antimicrobial formulation is effective against microorganisms selected from the group consisting of Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus MRSA strain, Enterococcus faecalis VRE strain, Candida albicans, Herpes simplex 1, vancomycin resistant Staphylococcus aureus~~, Norovirus, human immunodeficiency virus, Rhinovirus, Clostridium difficile, Klebsiella pneumonia, Mycobacterium tuberculosis, Salmonella typhimurium, Listeria monocytogenes, Vibrio cholera, Propionibacterium acnes, and Trichophyton mentagrophytes~~.

3. The antimicrobial formulation of claim 2, wherein the formulation inactivates the microorganisms by a factor of greater than or equal to a 3-log reduction within about 10 minutes.

~~4. The antimicrobial formulation of any one of claims 1 to 3, wherein the active component is selected from the group consisting of thymol, carvacrol, menthol, eugenol, cymene, p-cymene, limonene, geraniol terpineol, eucalyptol, and citral .~~

~~5~~4. The antimicrobial formulation of claim 1 ~~any one of claims 1 to 4~~, wherein the surfactant is selected from the group consisting of polyoxyethylene glycols,

polyoxypropylene glycols, glucosides, polyoxyethylene glycol octylphenol ethers, polyoxyethylene glycol alkylphenol ethers, glycerol alkyl esters, polysorbates, spans, cocamides, poloxamers, polyethoxylated tallow amines, sodium dodecyl sulfate, and sodium laureth sulfate.

~~6~~5. The antimicrobial formulation of claim 1~~any one of claims 1 to 5~~, wherein the organic co-solvent is selected from the group consisting of ethanol, methanol, acetic acid, acetone, methyl ethyl ketone, butanol, chloroform, DMSO, ether, citric acid, and carboxylic acid.

~~7. The antimicrobial formulation of any one of claims 1 to 6, wherein the active component is present at a concentration of about 0.005% to about 40%, by weight.~~

~~8. The antimicrobial formulation of claim 7, wherein the active component is present at a concentration of about 1% to about 40% by weight.~~

~~9~~6. The antimicrobial formulation of claim ~~7~~ 1, wherein the active component is present at a concentration of about 0.02% to about 1% by weight.

~~10~~7. The antimicrobial formulation of claim ~~7~~ 9, wherein the active component is present at a concentration of about 0.05% to about 0.10% by weight.

~~11. The antimicrobial formulation of any one of claims 1 to 10, wherein a weight ratio of the active component to the surfactant is between about 1 :5 and about 30:1.~~

~~12. The antimicrobial formulation of claim 11, wherein the weight ratio of the active component to the surfactant is between about 10: 1.~~

~~13~~8. The antimicrobial formulation of claim 1 ~~any one of claims 1 to 10~~, wherein the surfactant is present at a concentration of about 0.0015% to about 0.1% by weight.

~~14~~9. The antimicrobial formulation of claim 8~~any one of claims 1 to 10~~, wherein the surfactant is present at a concentration of about 0.005% to about 0.01% by weight.

~~15. The antimicrobial formulation of any one of claims 1 to 14, wherein the organic co-solvent is present at a concentration of about 0.2% to about 75% by weight.~~

~~16. The antimicrobial formulation of claim 15, wherein the organic co-solvent is present at a concentration of about 5% to about 75% by weight.~~

~~17~~10. The antimicrobial formulation of claim ~~15~~1, wherein the organic co- solvent is present at a concentration of about 0.2% to about 5% by weight.

~~18~~11. The antimicrobial formulation of claim ~~15~~1, wherein the organic co- solvent is present at a concentration of about 0.25% to about 1% by weight.

~~19~~12. The antimicrobial formulation of claim 1~~any one of claims 1 to 19~~, wherein the antimicrobial formulation is delivered in an emulsion form.

~~20~~13. The antimicrobial formulation of claim ~~19~~12, wherein the antimicrobial formulation comprises a ~~substantially~~ self-assembling emulsion.

~~21~~14. The antimicrobial formulation of claim ~~20~~13, wherein the antimicrobial formulation has a mean emulsion droplet size from about 25 nm to about ~~600~~ 3000 nm.

~~22~~15. The antimicrobial formulation of claim ~~21~~14, wherein a mean emulsion droplet size of the emulsion is about 25 nm to about 500 nm.

~~23~~16. The antimicrobial formulation of claim ~~21~~14, wherein a mean emulsion droplet size of the emulsion is about 25 nm to about 900 nm.

2417. The antimicrobial formulation of claim 2114, wherein a mean emulsion droplet size of the emulsion is about 100 nm to about 600 nm.

2518. The antimicrobial formulation of claim 2114, wherein a mean emulsion droplet size of the emulsion is about 600 nm to about 3000 nm.

2619. The antimicrobial formulation of claim 1any one of claims 1 to 25 further comprising a fragrance agent.

2720. The antimicrobial formulation of claim 2619, wherein the fragrance agent comprises at least one of an essential oil and a perfume.

2821. The antimicrobial formulation of claim 1 of any one of claims 1 to 27 further comprising a chelating agent.

2922. The antimicrobial formulation of claim 2821, wherein the chelating agent comprises is at least one selected from the group consisting of an EDTA and a citric acid.

30. The antimicrobial formulation of any one of claims 1 to 29 further comprising a spore germinating agent.

3123. The antimicrobial formulation of any one of claims 1 to 3022, wherein the antibacterial formulation is used for use as at least one of a surface disinfectant, an antiseptic preparation for wounds, and an agricultural disinfectant.

3224. The antimicrobial formulation of claim 1any one of claims 1 to 31, wherein the antibacterial formulation is implemented in a liquid form.

3325. The antimicrobial formulation of claim 1any one of claims 1 to 31, wherein the antibacterial formulation is incorporated into a hydrocolloid suspension.

~~34~~26. A product comprising the antimicrobial formulation of claim 1~~any one of claims 1-33~~ selected from the group consisting of cleaning solutions, disinfectants, sanitizers, antiseptics, wound care preparations, agricultural sprays or rinses, fruit and vegetable sprays for home use, wipes, and personal care products.

~~35~~27. An antibiotic formulation for use in ~~method for~~ reducing viable microorganisms on an object, comprising contacting the object with an effective amount of the antimicrobial formulation of any one of claims 1-~~32~~24.

~~36~~28. The ~~method~~ use of claim ~~34~~27, wherein the object comprises a hard surface, biological tissue, or foodstuff.