THEREFORE WHAT IS CLAIMED IS:

1. A peroxide based antimicrobial formulation comprising a nanoemulsion for application to skin for disinfection thereof, wherein the nanoemulsion comprises:

at least one peroxide containing compound present in a range to give from about ~~for releasing~~ 0.1 to about 4 wt./wt% released hydrogen peroxide;

at least one organic acid present in a concentration from about 0.01 to about 5 wt./wt. % for adjusting a pH of the formulation in a range from about pH 1 to about pH 4;

at least one long-chained (C9 to C22) aryl and/or alkyl alcohol, present in a concentration from about 0.1 to about 20 wt./wt. %;

at least one emollient present in a concentration from about 0.1 to about 40 wt./wt. %;

at least one non-ionic and/or anionic emulsifier present in a concentration from about 0.1 to about 20 wt./wt. %; and

water present in a concentration from about 20 wt./wt. % to about 95 wt./wt. %.

2. The formulation according to claim 1 wherein said at least one peroxide containing compound is selected from the group consisting of hydrogen peroxide, calcium peroxide, magnesium peroxide, sodium carbonate peroxide, magnesium peroxide, strontium peroxide, urea peroxide, and zinc peroxide, and any combination thereof.

3. The formulation according to claim 1 wherein said at least one peroxide containing compound is hydrogen peroxide.

4. The formulation according to claims 1, 2 or 3 wherein said at least one non-ionic and/or anionic emulsifier is selected from the group consisting of

ethoxylated C8 to C22 straight or branched fatty alcohols, ethoxylated C8 to C22 straight or branched fatty acids, C8 to C22 fatty acid esters, C8 to C22 fatty alcohols, and any combination thereof.

Diethylhexylcyclohexane, Hexyldecyl Laurate, Hexyldecanol, Dicaprylyl Ether, Caprylic/capric acid ester, Coco-Caprylate/Caprate, Cetearyl alcohol, Lauric acid hexylester, coco-caprylate/caprate, cetostearyl isononanoate, decyl oleate, diethylhexylcyclohexane, dicaprylyl ether, paraffin oil, and any combination thereof.

14. The formulation according to any one of claims 1 to 12 wherein said at least one emollient is Cetearyl isononanoate.

15. The formulation according to any one of claims 1 to 14 wherein said at least one organic acid is selected to adjust the pH of the formulation in a range from about pH 2 to about pH 3.

16. The formulation according to any one of claims 1 to 15 wherein said peroxide based nanoemulsion is comprised of droplets having a size in a range from about 0.1 to about 0.3 micrometers.

17. The formulation according to any one of claims 1 to 16 produced by temperature inversion phase.

18. Use of the formulation of any one of claims 1 to 17 in the manufacture of a medicament for ~~treating skin infections~~use as a skin disinfectant.