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ANTISEPTIC SOAP COMPOSITION

Roland S. Shumard, Brentwood, Mo., assignor to Monsanto Chemical Company, St. Louis, Mo., a corporation of Delaware

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This invention relates to antiseptic detergent compositions. More particularly it relates to detergent compositions containing a 2-nitro-ethylene substituted aromatic compound exhibiting antiseptic properties.

In accordance with this invention it has been found that 2-nitro-ethylene compounds of the general formula

$$R-CH=\underset{\displaystyle NO_2}{\overset{|}{C}}-R'$$

where R is an aromatic radical such as phenyl, tolyl, ethylphenyl, n-propylphenyl, cumyl, n-butylphenyl, tert. butylphenyl, sec. amylphenyl, (ethylhexyl)-phenyl, chlorophenyl, chlorotolyl, nitrophenyl, nitrotolyl, methoxyphenyl, ethoxyphenyl, xylyl, cymyl, dichlorophenyl, dibromophenyl, dinitrophenyl, dimethoxyphenyl, diethoxyphenyl, trimethylphenyl, triethylphenyl, cyclohexylphenyl, benzylphenyl, phenethylphenyl, biphenyl, naphthyl, etc., and where R' is a hydrogen or a short chain alkyl group such as methyl, ethyl, propyl, isopropyl, butyl, etc., when admixed with a detergent composition in minor proportions forms a detergent product exhibiting highly effective antiseptic properties.

For purposes of this application the 2-nitro-ethylene substituted aromatic compounds are termed antiseptic agents hereinafter.

The antiseptic agents of this invention are readily incorporated in detergent compositions whether the latter be solid or liquid. The new antiseptic agents are nonvolatile and remain permanently in the detergent composition. They do not affect the lathering, cleansing or physical properties of the detergent nor do they impart any unpleasant odors nor discolor the finished detergent composition.

As exemplary of this invention, detergent containing compositions are prepared by intimately mixing the ingredients listed below to form a composite containing 2% by weight "active ingredient."

Composition	A (parts by weight)	B (parts by weight)
"Ivory" brand neutral white high grade toilet soap (a mixture of 80% sodium soap and 20% potassium soap produced from a 70% tallow and 30% coconut oil glyceride blend in accordance with U. S. 2,295,594)	98	98
2-nitro styrene	2	
2-nitro-O,O'-dichlorostyrene		2

Aliquots of each of the above described compositions containing 2% by weight "active ingredient" are added to a nutrient agar medium so as to give in each instance a concentration of 10 p. p. m. (1:100,000) of "active ingredient." The agar in each case is then poured into a petri dish, allowed to harden and then is streaked with a 24 hour old culture of *Salmonella typhosa* of standard resistance. The incubation in each case is made at 37° C.

for 72 hours and the degree of bacterial growth is noted below:

Table I

Composition	A	B
Growth	no growth	no growth.

Compositions A and B, respectively, upon further dilution with nutrient agar so as to give a composition having a concentration of 1 p. p. m. (1:1,000,000) of active ingredient upon being streaked with a 24 hour old culture of *Salmonella typhosa* of standard resistance after incubation at 37° C. for 72 hours exhibited substantially no signs of bacterial growth.

Replacing either of the respective antiseptic agents of Compositions A and B above with any one of the following:

2-nitro-P-methyl styrene
2-nitro-P-tert. butyl styrene
2-nitro-P-phenyl styrene
2-nitro-P-benzyl styrene
2-nitro-propen-1-yl benzene
2-nitro-buten-1-yl benzene
2-nitro-penten-1-yl benzene
2-nitro-isopenten-1-yl benzene
2-nitro-hexen-1-yl benzene
2-nitro-P-chloro styrene
2-nitro-propen-1-yl-P-chlorobenzene
2-nitro-propen-1-yl-P-bromobenzene
2-nitro-propen-1-yl-O,P-dichlorobenzene
2-nitro-buten-1-yl-P-nitrobenzene
2-nitro-buten-1-yl-O,P-dichlorobenzene
2-nitro-buten-1-yl-P-methoxybenzene

and evaluating in same manner, satisfactory control of *Salmonella typhosa* is obtained.

As further exemplary of this invention, detergent compositions are prepared by intimately mixing the ingredients listed below to form a composite containing 2% by weight "active ingredient."

Composition	C (parts by weight)	D (parts by weight)
"Ivory" brand neutral white high grade toilet soap (a mixture of 80% sodium soap and 20% potassium soap produced from a 70% tallow and 30% coconut oil glyceride blend in accordance with U. S. 2,295,594)	98	98
2-nitro-O,O'-dichlorostyrene	2	
P-[2-nitro-propen-1-yl] veratrole		2

Aliquots of each of the above described compositions containing 2% by weight "active ingredient" are added to a nutrient agar medium so as to give in each instance as a concentration of 10 p. p. m. (1:100,000) of "active ingredient." The agar in each case is then poured into a Petri dish, allowed to harden and then is streaked with a 24 hour old culture of *Micrococcus pyogenes* var. *aureus* of standard resistance. The incubation in each case is made at 37° C. for 72 hours and the degree of bacterial growth noted below:

Table II

Composition	C	D
Growth	no growth	no growth.

Replacing the respective antiseptic agents of Compositions C and D above with any one of the following:

2-nitro-O,O'-dichloro-P-methyl styrene
2-nitro-O,O'-dibromo-styrene
2-nitro-propen-1-yl-O,O'-dichlorostyrene
P-(2-nitro-buten-1-yl) veratrole
P-(2-nitro-n-hexen-1-yl) veratrole

and evaluating in the same manner satisfactory control of *Micrococcus pyogenes* var. *aureus* is obtained. In the control of *Micrococcus pyogenes* var. *aureus* compounds of the formula

$$R—CH=CH(NO_2)$$

where R is a benzenoid hydrocarbon radical such as phenyl, tolyl, ethylphenyl, cumyl, tert. butylphenyl, xylyl, cymyl, etc. or a chlorine substituted benzenoid hydrocarbon radical are particularly effective.

Relatively small amounts of the new antiseptic agents in a detergent composition have been found to yield efficient antiseptic detergent compositions. Amounts as low as 0.5 to 1% by weight based upon the weight of the detergent have proved satisfactory in some instances. However, it is preferred to employ amounts in the order of 1–3% by weight. While larger amounts may be employed, as for example up to 10% by weight based upon the weight of the detergent, the upper limit will be determined by practical consideration. Other antiseptic agents may be incorporated as well as emollients, water softeners and the well-known "vehicles" of the soap trade. Various colors, anti-oxidants, perfumes and the like may be included where desirable.

The term "detergent" includes soap and the synthetic detergents such as the Turkey red oils, the highly sulfonated fatty acids and the sulfated fatty alcohols. The term "detergent" includes also mixtures of synthetic detergents and soap. The term "soap" or "detergent soap" as used herein is employed in its popular or ordinary meaning, that is, those cleansing compositions, namely the well-known washing, toilet and liquid soaps prepared from an alkali metal compound such as sodium or potassium hydroxide and a fat or fatty acid.

The antiseptic agents of this invention may be added to the detergent compositions during the crutching or melting or similar operation. The new antiseptic agents may be first dissolved in a suitable solvent and then incorporated in the detergent if so desired. In general, any

method which results in the new antiseptic agent of this invention being uniformly incorporated in the final composition is satisfactory.

What is claimed is:

1. An antiseptic detergent composition comprising a detergent soap and 0.5 to 10% by weight based upon the detergent soap of a compound of the formula

$$R—CH=\underset{\displaystyle NO_2}{\overset{\displaystyle |}{C}}—R'$$

where R is selected from the group consisting of aromatic hydrocarbon radicals, nitro substituted aromatic hydrocarbon radicals, lower alkoxy substituted aromatic hydrocarbon radicals, and halogen substituted aromatic hydrocarbon radicals wherein the halogen substituents are selected from the group consisting of bromine and chlorine, the carbon atom content of the respective substituted and unsubstituted aromatic hydrocarbon radicals not exceeding 14 carbon atoms, and where R' is selected from the group consisting of hydrogen and short chain alkyl radicals.

2. An antiseptic detergent composition comprising a detergent soap and 1–3% by weight based upon the detergent soap of a compound of the formula

$$R—CH=CH(NO_2)$$

where R is a benzenoid radical consisting of elements selected from the group consisting of carbon, hydrogen and chlorine atoms.

3. An antiseptic detergent soap composition comprising a detergent soap and 1–3% by weight based upon the detergent soap of 2-nitro styrene.

4. An antiseptic detergent soap composition comprising a detergent soap and 1–3% by weight based upon the detergent soap of O,O'-dichloro-2-nitro styrene.

5. An antiseptic detergent soap composition comprising a detergent soap and 1–3% by weight based upon the detergent soap of P-(2-nitro-propen-1-yl) veratrole.

6. An antiseptic detergent soap composition comprising a detergent soap and 1–3% by weight based upon the detergent soap of 2-nitro-P-chlorostyrene.

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