## Cosmetic and Drug Preservation

PRINCIPLES AND PRACTICE

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732 Wallhäusser

EEC No.:

CAS No.: 139-07-1

Registered names: Zephirol, Roccal, Dodigen 226, Barquat

MB-50

54

Type of compound: Quaternary (cationic) compound

## 1. Structure and Chemical Properties

Appearance: White or yellowish white, amorphous pow-

der, mostly in 50% solution; very bitter

taste

Odor: Aromatic odor

Solubility: Very soluble in water (about 50%) and al-

cohols

Optimum pH: 4.0-10.0; 1% solution pH 6.0-8.0

Stability: Good, stable at 121°C for 30 min

Compatibility and inactivation: Incompatible with anionics, soap, nitrates,

heavy metals, citrates, sodium tetraphosphate, sodium hexymetaphosphate, and oxidants, rubber, proteins, blood; ad-

sorbed by plastic materials [2]

Structural formula:

Represents a mixture of the alkyls C8H17

to C<sub>18</sub>H<sub>37</sub>

Assay:

1. Gas chromatography [1]
2. Thin layer chromatography

## 2. Antimicrobial Spectrum [3]

Test organisms (~10 <sup>6</sup> CFU/ml)	Minimal germicidal concentration ( $\mu g/ml$ ) (suspension test)	
	24 hr	5 min
Staphylococcus aureus	4-10	50
Escherichia coli	10	80
Klebsiella pneumoniae	10	200
Pseudomonas aeruginosa	10-100	
Pseudomonas fluorescens	10-100	
Pseudomonas cepacia	10-100	

 Antimicrobial Spectrum [3] (Continued)

Test organisms (~106 CFU/ml)	Minimal germicidal concentration (µg/ml) (suspension test)	
	24 hr	5 min
Candida albicans Aspergillus niger Penicillium notatum	10 100-200 100-200	160

Activation by addition of 0.1% EDTA sodium or nonionic detergents; reduced activity if pH <5.

3. Toxicity

Acute oral toxicity

Mouse: Rat:

 $LD_{50}$ , 300 mg/kg

LD<sub>50</sub>, 450-750 mg/kg

Subacute oral toxicity

Rat:

Daily oral application of 550 ppm over 3

months without toxic effects.

Chronic toxicity

Rat:

Dietary study with addition of 0.25% over

2 years showed no toxic effects.

Primary skin irritation:

0.1% solution shows no effect on the skin

of animals and human volunteers; 0.5%

caused irritation.

Rabbit eye irritation:

1:3000 dilution is tolerated.

Mutagenicity:

Negative Ames test

4. Cosmetic Applications

Hair conditioner with cationics; addition as preservative or antibacterial compound; eye preparations; EEC maximum, 0.5%; addition to deodorants (0.05-0.1%) and hair

conditioners

5. Other Applications

Preoperative antiseptic for skin or for wounds, burns; disinfectants, technical germicide; preservative in pharmaceutical preparations; eyedrops, 0.01-0.1%

6. Suppliers

Onyx Chemical, Lonza Inc., Hoechst Corp.

7. References

 H. Mitchner and E. C. Jennings, J. Pharm. Sci., 56:1595 (1967).

