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# EVALUATION OF THE IRRITATION OF A NEW POTENT ANTIMICROBIAL SURFACTANT-C31G: AN IRRIGATION STUDY ON ALBINO RABBIT EYES

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## INTRODUCTION

Alkyl N-betaine and Alkyl N-N dimethylamine oxide are amphoteric surface active compounds which demonstrate broad spectrum antimicrobial property. C31G is a specific formulation which contains equal molar concentration of these two surfactants. In order to obtain a synergistic effect, C31G is buffered with citric acid to a pH of approximately 5. C31G is active on both gram positive and gram negative bacteria and its fungicidal activity is as low as 13 ppm (1-3). The mode of action of this antimicrobial agent is related to its absorption by glycolipid cell walls and its lytic effects on the cell membranes of the microorganisms. It promotes the healing of infected and non-infected wounds. This biological activity is attributed to its effect on fibrin formation(4). This composition also exhibits skin degerming, cleansing and deodorizing properties and its use exhibits long term inhibition of body odor (1). Results of in vitro experiments have shown that the antimicrobial effectiveness of C31G is comparable or even superior to widely used topical disinfecting agents such as hexachlorophene, benzalkonium chloride, iodophor and chlorhexidine gluconate (5). It should be pointed out that C31G has a bactericidal effect on *Pseudomonas aeruginosa* and that this agent is a non-irritant to the rabbit eye as has been substantiated by "Draize" test (6,7). The purpose of the present study is to investigate the cytotoxic effect of C31G at

minimum bactericidal concentration on rabbit eye tissues.

## EXPERIMENTAL

Isotonic and sterile solutions of C31G (Batch No:001, Humerdon Pharmaceuticals, USA) were prepared at 0.02% (v/v) concentration in "Sorensen" phosphate buffer (pH 7.4). After 12 albino rabbits were anesthetized, the right eyes of the animals were irrigated with 400 ml of the test solution, the left eyes of the animals were irrigated with isotonic buffer solution as a control. After the rabbit's eyes were exposed to the solutions for an hour, the animals were killed by an overdose of sodium pentobarbital injected intravenously. The eyes, after being removed, were kept in formaldehyde solution for further examination. For the cytological evaluation, the central area of both eyes including the optical disk was cut into thin slices attempting to preserve the natural curvature of the animal's eyeball. These specimens then were dyed with hematoxyline-eosin and examined by an optical microscope (Nikon, Alphaphot-2, YS2-H) for possible cellular damage.

## RESULTS AND DISCUSSION

The present work showed that among the experimental group, five animals had conjunctivitis and two cerato-conjunctivitis. It was observed that in two animals of the control group there was a slight infiltration of

lymphocytes into the ciliary-body of the eye. Vascularization was observed in only one animal in the control group. No severe inflammation was determined in either group. C31G is concluded as a mild irritant to the rabbit eye. But, the present work has been established in exaggerated experimental conditions for eye irritation evaluation. Therefore, it is considered to design further animal studies for observing the results of the application of C31G as a contact lens cleansing and soaking solutions, and also for evaluating its enhancing strength on corneal drug permeation.

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