

Summary of  
CYTOTOXICITY STUDIES  
OF AN ANTIMICROBIAL SOLUTION

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Studies to Show That Solution A (PAC5) Antimicrobial  
Technology is Bactericidal and Nontoxic

Initially, we had been examining the antimicrobial properties of Dr. Funt's solution preparation and have found them to be quite extensive and broad range in effectiveness covering a wide variety of microbes. What we performed here in these current studies were tests to check on any cytotoxic properties of these compounds. Tests earlier on rabbits demonstrated no visible toxicity.

We initiated tests in an *in vitro* cell culture system to increase the level of sensitivity to an extreme level. Both tests are summarized here.

#### I. Rabbit Studies

New Zealand white rabbits both male and female were fed solutions of 1:10, 1:20, 1:40, 1:60 and 1:80 concentrations of solution. Animals were fed *ad libitum* from mounted containers for periods up to four months. Our results showed that animals refused high concentrations of Solution A and did not tolerate concentrations of 1:40 very well. However, at 1:60 dilutions of Solution A, they drank freely. Autopsies revealed no organ damage in liver, spleen, intestines, kidney or rectum or even orally as well. No bowel changes were noted nor changes in fecal pellets. No urinary function in color or volumes or release times were noted over regular water controls.

A Draize test simulation was also performed and again at concentrations of 1:60 no eye irritation was noted by 3 ml eyewashes morning and evening. Specimens were tested up to six weeks. Dilutions of 1:10, however, showed reddening and irritability in one day. Germicidal levels therefore were still effective when dilutions taking cytotoxicity out of contention were used.

#### II. Tissue Culture Studies

The non-transformed mouse cell line C3H 10T  $\frac{1}{2}$  was selected for *in vitro* testing based on its general use in cytotoxicity testing and its sensitivity to numerous compounds. We wished to find its toxicity concentration to Funt's Solution A. We also wished to find the dilution of the solutions where toxicity was lost. We did not look at chemically induced malignant derivatives of the C3H line.

Cytotoxicity was declared when cells rounded and/or detached. At concentrations of the Funt Solution of 0.02%, cytotoxicity was noted. At concentrations of 0.01% of Solution A, cytotoxicity was lost. Concentrations below 0.01% also demonstrated no effect on cell morphology or detachment.

These results combined with animal studies give every indication that dilutions of the Funt Antimicrobial Solution, that are bactericidal, are not cytotoxic to mammalian cells. Furthermore, earlier studies on wound healing in rabbits showed no inhibition of wound healing by Solution A as a further indication of a lack of toxicity of the antimicrobials in animal models. All of these studies indicate a great potential to the Funt Solution in wound treatment or in infection control in general.