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TISSUE RESPONSE TO ALOE VERA GEL FOLLOWING PERIODONTAL SURGERY

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By

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CHAPTER V

DISCUSSION

Aloe vera gel has been used for many years in medicine with only Crewe (1937) reporting possible side reactions on the patients treated. Since Crewe's (1937) report, no other adverse reactions have been associated with the use of Aloe vera.

Coats, et al. (1969) tested Aloe vera gel in experimental animals in doses up to 25 per cent of body weight per day. These animals have shown no physiological, genetic, anaphylactic, or other unfavorable reaction.

Aloe vera gel is thought to contain certain substances which may be responsible for its implied anti-inflammatory properties. Coats' (1969) analysis of Aloe vera gel showed the following constituents: lignum, anthroquinone radical, vitamin A, vitamin C, and proteolytic enzymes. The lignum is a cellulose-like material that may be responsible for the ease with which Aloe vera has been reported to penetrate the tissue. The anthroquinones are similar to

alkaloids and can produce analgesia. Vitamin A is needed in the body for the integrity of epithelial cells and vitamin C is needed for maintenance of connective tissue. Proteolytic enzymes clean up tissue debris and prevent swelling. All these properties are beneficial in wound healing but none of these actions have been specifically implicated as an action of Aloe vera gel.

The healing of the epithelium and connective tissue of the attached gingiva has been thoroughly reported by Goldman and Cohen (1968). Flap surgery retains mature tissue and the changes within this tissue were the concern of this thesis. They reported that by the second or third day of healing the surface epithelium is essentially normal with increased mitosis of the basal cell layer. In the connective tissue there is a fibroblastic and capillary proliferation with an infiltration of polymorphonuclear leukocytes. At four days lymphocytes and plasma cells are more prevalent than polymorphonuclear leukocytes, but after four days only a minimum number of any kind of inflammatory cells are seen. Also at four days, the corium shows many basophilic cells, is highly vascular and contained fibrillar material.

The number of fibroblasts increases rapidly until the sixth or seventh day after surgery and gives the healing wound a cellular appearance. Goldman and Cohen (1968) stated that it was not until the ninth day that dense collagen bundles began to appear in the corium. They also reported a decrease in the number of capillaries after nine days. They seem to indicate that this heavy fibrosis accompanied by a decrease in vascularity is a sign of healing.

In the present study, the tissue upon which Aloe vera gel had been used showed a greater degree of fibrosis at both one and two weeks although two of the one week control sections showed marked fibrosis. This increased fibrosis may indicate a more mature tissue although this finding cannot be substantiated.

Aloe vera treated tissue demonstrated only a mild inflammatory infiltration at both one and two weeks. The control showed a moderate number of inflammatory cells in two cases. This may indicate a decrease in inflammation in the experimental tissue as compared to the controls. The difference in number of vessels both dilated and not, was very slight although the Aloe vera specimens showed fewer dilated vessels overall.

The purpose of this study was to find a way to speed healing and control postoperative pain and swelling following periodontal flap surgery. The patients' reactions, therefore, may be the most important considerations of this study. The patients reported less pain and swelling from the Aloe vera quadrants. Even though there was patient variability as to pain reaction, they did not know to which side the Aloe vera had been applied.

Although clinical impressions are often faulty, it is interesting to note that in four out of the five cases comparing Aloe vera to the control, an unbiased observer selected the Aloe vera quadrant as appearing the least inflamed at one week. The Aloe vera quadrant was chosen as the least inflamed in three out of five cases at two weeks. In no case was the control side said to look better than the Aloe vera side.

The quadrants compared in each case involved essentially the same kind and amount of surgery. When possible, either the entire maxillary or mandibular arch was used so as to reduce the variable postoperatively.

As stated by Stahl, et al. (1969), the only use of the pack is for the patient's comfort and healing will progress just as rapidly with no dressing. In this study the pack was used both for comfort and as a vehicle for the Aloe vera gel. The pack used over the experimental side was thoroughly soaked in Aloe vera and was tightly adapted over the sutured flaps after Aloe vera had been applied topically to the tissues.

Aloe vera was used as a mouthwash in two cases in order to give some indication of the use of greater quantities of the gel. The results in these two cases were encouraging but are inconclusive due to the small sample. It would be interesting and informative in the future to take a large group of patients needing periodontal surgery and clinically evaluate the post-operative use of Aloe vera gel as a mouthwash in one-half of the group. The control group could be given a placebo mouthwash. In this way enough data might be collected either to support or condemn the general use of Aloe vera gel following periodontal surgery.