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Elasto-Gel™ : Modulation of Inflammation and Bacteriostasis
by Glycerin as applied in a Hydrogel Sheet Formulation

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Based on the technology of the preservation method of the Euro Skin Bank glycerin has been recognized to have distinct anti-microbial properties dependent on its concentration. Gram-negative strains such as *Pseudomonas Aeruginosa* are more susceptible in comparison with Gram-positive strains such as staphylococci. Glycerol, as a non-toxic natural agent, is extensively used in deep-freezing technology with the ultimate goal to preserve viability. However, in high concentrations cells will become non-viable as a result of dehydration. After rehydration the cell structure is well preserved, but all cells remain non-viable. In wound healing glycerin is attractive to use if the concentration achieved at the wound surface is high enough to be bacteriostatic, but without unacceptable slowing-down of epithelial outgrowth. The mode of action of glycerin in a hydrogel sheeting was studied in an experimental burn wound model in comparison with a standard (water based) hydrogel. At the glycerin treated side no wound infection can be observed in contrast to the contralateral hydrogel treated side, which became heavily infected. Also a diminished inflammation reaction is seen. Macrophages store lipids as a result of phagocytosis of (too much) glycerin. Although there is a slow release of glycerin incorporated in the hydrogel, the daily amount applied to the wound can interfere with the rate of epithelialization. Daily application of the glycerin hydrogel can impair wound healing in total. However, when the glycerin hydrogel is applied one time per week epithelialization rate will be mainly unchanged. For this reason the glycerin hydrogel wound dressing is advised to be applied only in smaller partial thickness burn wounds, which will heal spontaneously. Beside the fact that collagen fibers in the remaining dermal matrix will bind glycerol preferentially and the inflammation reaction is modulated, also inhibition of bacterial growth by the glycerin are attractive aspects as an alternative therapy to Flammazine®. Silversulphadiazine in the conventional formulation has no inflammation modulatory properties. Above all it also induces a chronic inflammation reaction around dead hair follicle remnants, which is persistent even a long time after complete epithelialization and will intensify fibrosis and contraction.