



Albert Bonniot Institute

Research Center – INSERM/UJF-U823

« Molecular Ontogenesis & Oncogenesis »

Equipe : **Ontogénèse et Cellules**

Souches du Tégument

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To the members of the Keratos association

Grenoble, February 24, 2009

Dear friends,

I am an internationally recognized researcher group leader for epithelial differentiation, especially the epidermis and the corneal epithelium. I will speak below about the two most currently used preservatives: Benzalkonium chloride and for the “sensitive eyes” EDTA.

The benzalkonium is a surfactant that destroys the bacterial membranes, and has the same effect on eukaryote cell membranes. It is a very potent disinfectant for contaminated bench, and may also be used to disinfect the hands. However, it should not be used frequently as it is an allergen. Additionally, while the hand skin is protected by a water proof stratum corneum, the corneal epithelium lacks this protection cover. Indeed all cells, even at the upper surface of the corneal epithelium, are living cells that are not protected against water loss, and which require to be continuously protected by a liquid. Without it, the corneal epithelial cells dry and die in a few minutes.

For many years, I am studied epidermal and corneal epithelium differentiation. In order to dissociate those epithelia from their underlying mesenchyme, the dermis for the skin, the stroma for cornea, I use EDTA. For the skin, I am able to recover the epidermis after soaking it for 48hours. The EDTA diffusion can occur only through the dermis and skin pores. In the cornea case, one hour is sufficient to obtain the lift of the

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epithelium and if you wait a little more, the epithelium breaks off in pieces and even in individual cells. This effect is due to the capture of calcium by EDTA, calcium which is required for epithelial cell adhesion (sticking). This property is useful for the research worker who wants to obtain an epithelium without its mesenchyme, or wants to start in vitro cell culture. At a very low concentration and for un-frequent single use, it is possible to hope that the structure of the corneal epithelium may not be altered. However in the case of eye dryness disease, which require continuous eye lotion, I am just frightened by the thought of what I see each day in my work, simply by following the EDTA effects under my microscope.

The packaging of eye lotions in small quantities for a day-time use must be generalized. This is just common sense. For all these reasons, I sustain without caution the current Keratos petition.

