

# Anti-inflammatory effects of an oxychlorine compound in a murine model of passive cutaneous anaphylaxis

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## JUSTIFICATION

- Atopic dermatitis is a common inflammatory skin disease characterized by childhood onset, severe pruritus and chronically relapsing course.
- Pathogenesis is unknown but the disease seems to be the result of genetic susceptibility, epidermal barrier dysfunction and immune hypersensitivity related to mast cell degranulation.
- Pharmacological treatment is complex requiring moisturizers, occlusion, soaks, skin protection agents, antihistamines, antidepressants, antibiotics, corticosteroids, leukotriene inhibitors, immunosuppressors and even antineoplastics.
- One oxychlorine compound-based solution (i.e. super-oxidized) has been proven to diminish mast cell-dependent secretion of inflammatory mediators *in vitro*, such as histamine and cytokines (Medina, et al., 2007).

## OBJECTIVE

- To test the effect of an oxychlorine compound\* on a murine model of atopic dermatitis, by evaluating the reduction of passive cutaneous anaphylaxis reaction after a single and a repetitive application of the product.



Figure 1. Characteristic lesions found in atopic dermatitis. Note inflammation and skin redness.

## RESULTS

- A single application of an oxychlorine solution is able to diminish passive anaphylactic reaction in mice.

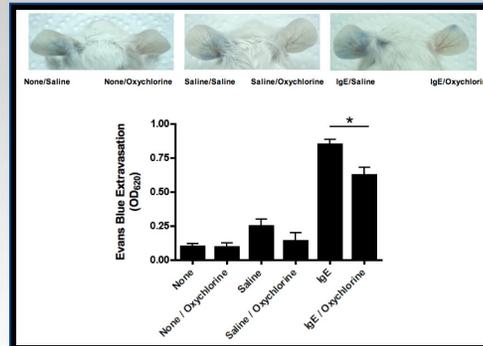


Figure 2. Ears from SW mice were not sensitized (none), or sensitized intradermally with saline solution (saline) or Monoclonal anti DNP IgE (IgE). After 18 hours of sensitization, a single topical application of saline solution or an oxychlorine compound was performed in the indicated ears. Thirty minutes after saline or oxychlorine application, antigen dissolved in Evans blue was intravenously injected and PCA reaction was monitored by Evans blue extravasation to the ear tissue. Inset shows representative photographs of the animals used in this study. In the lower graph, the light absorption at 620 nm of a group of six mice per condition tested can be observed. Values are shown as the mean  $\pm$  SEM, \*  $p < 0.05$

- Repeated application of an oxychlorine compound diminish PCA reaction outcome at the same extent that a single one.

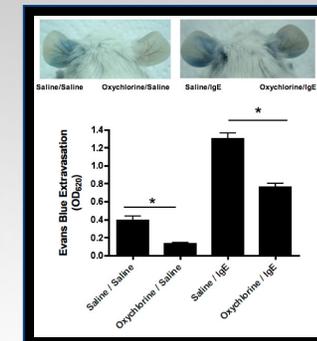


Figure 3. Ears from SW mice were treated with a topical administration of saline solution (saline) or an oxychlorine compound every 6 hours during 3 days, including the sensitization phase with IgE (IgE) or saline. Thirty minutes after the last topical application in the sensitized ears, antigen dissolved in Evans blue was intravenously injected and PCA reaction was monitored by Evans blue extravasation to the ear tissue. On the inset it can be observed representative photographs of some of the animals used in this study. In the lower graph, the light absorption at 620 nm of a group of six mice per condition tested can be observed. Values are shown as the mean  $\pm$  SEM, \*  $p < 0.05$

## CONCLUSION

This oxychlorine-containing solution could potentially be used to ameliorate the inflammatory process induced by IgE-antigen-induced mast cell degranulation or chemical irritation of the skin in atopic eczema. Considering the also documented antimicrobial activity of the solution (Landa et al, JHI, 2005), oxidative agents like this could become a new type of drug for the comprehensive treatment of diverse inflammatory conditions of skin and soft tissues, including wound care.

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\*Oxychlorine solution used in this study was a Microcyn™Technology- based solution, Oculus Innovative Sciences, USA.

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