

Go back to [alkalinewaterplus.com/information-about-water-ionizer-research/](http://alkalinewaterplus.com/information-about-water-ionizer-research/)

## **The immunological effects of electrolyzed reduced water on the *Echinostoma hortense* infection in C57BL/6 mice.**

Lee KJ, Jin D, Chang BS, Teng YC, Kim DH. Department of Environmental Medical Biology, Wonju College of Medicine, Yonsei University, Gang Won, South Korea.

Electrolyzed reduced water (ERW) is widely used for drinking by people in Asia. The purpose of this study was to examine the immunological effect of ERW on the immunity of animals by supplying ERW to C57BL/6 mice infected with *Echinostoma hortense* metacercariae. In the non-infected groups, interleukin (IL)-4 ( $p < 0.001$ ), IL-5, IL-10, IL-1beta, tumor necrosis factor (TNF)-alpha and immunoglobulin (Ig) A expression of the group fed ERW (ERW group) increased in small intestine compared with the normal control group. In the case of infected groups, the group fed ERW (ERW+E. hortense group) showed the result that IL-4, IL-5, IL-10 and Ig A expression increased, but IL-1beta and TNF-alpha ( $p < 0.001$ ) decreased, and the number of goblet cells ( $p < 0.001$ ) and helix pomatia agglutinin (HPA) positive cells increased compared with the group without feeding ERW. However, adult worm recovery rate was markedly increased ( $p < 0.05$ ). On the other hand, the expression of all the cytokines except IL-10 in spleen was mildly increased but not significant statistically, and there was no significant difference in the numerical changes of white blood cell (WBC). These results indicate that feeding ERW may have influence on the local immune response (Th-1 type cytokines such as IL-1beta, TNF-alpha) in the small intestine but not on the systemic immune response. PMID:19252295

Biological & Pharmaceutical Bulletin. 2009 Feb;73(2):280-7. Epub 2009 Feb 7.