

Johdanto seuraaville tutkimuksille, jotka käsittelevät alkalista vettä:

Processed food, polluted air, polluted water, carcinogenic pharmaceuticals, mental stress just some of the components of an overly acidic body.

One of the main functions of the body is to rid itself of harmful acidic waste products (toxins). But, with the accumulation of acidic waste from polluted air, water, and food, combined with the normal toxins created by the metabolic processes of the human body, we are finding it harder and harder to maintain the proper pH balance for health.

Independent researchers have been concluding for years (although the FDA loves to ignore these findings) that one way to help rid the body of harmful acidic waste is through the consumption of electron rich alkaline water.

The following are several scientific research papers on the benefits of ionized electron rich alkaline water!

1. Electrolyzed-reduced water scavenges active oxygen species and protects DNA from oxidative damage. Biochem Biophys Res Commun. 1997 May 8;234(1):269-74.

Shirahata S, Kabayama S, Nakano M, Miura T, Kusumoto K, Gotoh M, Hayashi H, Otsubo K, Morisawa S, Katakura Y.

Institute of Cellular Regulation Technology, Graduate School of Genetic Resources Technology, Kyushu University, Fukuoka, Japan. sirahata@grt.kyushu-u.ac.jp

Active oxygen species or free radicals are considered to cause extensive oxidative damage to biological macromolecules, which brings about a variety of diseases as well as aging. The ideal scavenger for active oxygen should be 'active hydrogen'. 'Active hydrogen' can be produced in reduced water near the cathode during electrolysis of water. Reduced water exhibits high pH, low dissolved oxygen (DO), extremely high dissolved molecular hydrogen (DH), and extremely negative redox potential (RP) values. Strongly electrolyzed-reduced water, as well as ascorbic acid, (+)-catechin and tannic acid, completely scavenged O₂⁻² produced by the hypoxanthine-xanthine oxidase (HX-XOD) system in sodium phosphate buffer (pH 7.0). The superoxide dismutase (SOD)-like activity of reduced water is stable at 4 degrees C for over a month and was not lost even after neutralization, repeated freezing and melting, deflation with sonication, vigorous mixing, boiling, repeated filtration, or closed autoclaving, but was lost by opened autoclaving or by closed autoclaving in the presence of tungsten trioxide which efficiently adsorbs active atomic hydrogen. Water bubbled with hydrogen gas exhibited low DO, extremely high DH and extremely low RP values, as does reduced water, but it has no SOD-like activity. These results suggest that the SOD-like activity of reduced water is not due to the dissolved molecular hydrogen but due to the dissolved atomic hydrogen (active hydrogen). Although SOD accumulated H₂O₂ when added to the HX-XOD system, reduced water decreased the amount of H₂O₂ produced by XOD. Reduced water, as well as catalase and ascorbic acid, could directly scavenge H₂O₂. Reduced water suppresses single-strand breakage of DNA by active oxygen species produced by the Cu(II)-catalyzed oxidation of ascorbic acid in a dose-dependent manner, suggesting that reduced water can scavenge not only O₂⁻ and H₂O₂, but also ¹O₂ and .OH.

PMID: 9169001 [PubMed - indexed for MEDLINE]

2. The mechanism of the enhanced antioxidant effects against superoxide anion radicals of reduced water produced by electrolysis.

Biophys Chem. 2004. Jan 1;107(1):71-82. Hanaoka K, Sun D, Lawrence R, Kamitani Y, Fernandes G.

Bio-REDOX Laboratory Inc. 1187-4, Oaza-Ueda, Ueda-shi, Nagano-ken 386-0001, Japan.

hanak@rapid.ocn.ne.jp

We reported that reduced water produced by electrolysis enhanced the antioxidant effects of proton donors such as ascorbic acid (AsA) in a previous paper. We also demonstrated that reduced water produced by electrolysis of 2 mM NaCl solutions did not show antioxidant effects by itself. We reasoned that the enhancement of antioxidant effects may be due to the increase of the ionic product of water as solvent. The ionic product of water (pK_w) was estimated by measurements of pH and by a neutralization titration method. As an indicator of oxidative damage, Reactive Oxygen Species- (ROS) mediated DNA strand breaks were measured by the conversion of supercoiled phiX-174 RF I double-strand DNA to open and linear forms. Reduced water had a tendency to suppress single-strand breakage of DNA induced by reactive oxygen species

produced by H₂O₂/Cu (II) and HQ/Cu (II) systems. The enhancement of superoxide anion radical dismutation activity can be explained by changes in the ionic product of water in the reduced water.

PMID: 14871602 [PubMed - in process]

3. Comparison of electrolyzed oxidizing water with various antimicrobial interventions to reduce *Salmonella* species on poultry.

Poult Sci. 2002 Oct;81(10):1598-605.

Fabrizio KA, Sharma RR, Demirci A, Cutter CN.

Department of Food Science, The Pennsylvania State University, University Park 16802, USA.

Foodborne pathogens in cell suspensions or attached to surfaces can be reduced by electrolyzed oxidizing (EO) water; however, the use of EO water against pathogens associated with poultry has not been explored. In this study, acidic EO water [EO-A; pH 2.6, chlorine (CL) 20 to 50 ppm, and oxidation-reduction potential (ORP) of 1,150 mV], basic EO water (EO-B; pH 11.6, ORP of -795 mV), CL, ozonated water (OZ), acetic acid (AA), or trisodium phosphate (TSP) was applied to broiler carcasses inoculated with *Salmonella* Typhimurium (ST) and submerged (4 C, 45 min), spray-washed (85 psi, 25 C, 15 s), or subjected to multiple interventions (EO-B spray, immersed in EO-A; AA or TSP spray, immersed in CL). Remaining bacterial populations were determined and compared at Day 0 and 7 of aerobic, refrigerated storage. At Day 0, submersion in TSP and AA reduced ST 1.41 log₁₀, whereas EO-A water reduced ST approximately 0.86 log₁₀. After 7 d of storage, EO-A water, OZ, TSP, and AA reduced ST, with detection only after selective enrichment. Spray-washing treatments with any of the compounds did not reduce ST at Day 0. After 7 d of storage, TSP, AA, and EO-A water reduced ST 2.17, 2.31, and 1.06 log₁₀, respectively. ST was reduced 2.11 log₁₀ immediately following the multiple interventions, 3.81 log₁₀ after 7 d of storage. Although effective against ST, TSP and AA are costly and adversely affect the environment. This study demonstrates that EO water can reduce ST on poultry surfaces following extended refrigerated storage.

PMID: 12412930 [PubMed - indexed for MEDLINE]

4. Treatment of *Escherichia coli* (O157:H7) inoculated alfalfa seeds and sprouts with electrolyzed oxidizing water.

Int J Food Microbiol. 2003 Sep 15;86(3):231-7.

Department of Agricultural and Biological Engineering, Pennsylvania State University, University Park, PA 16802, USA.

Electrolyzed oxidizing water is a relatively new concept that has been utilized in agriculture, livestock management, medical sterilization, and food sanitation. Electrolyzed oxidizing (EO) water generated by passing sodium chloride solution through an EO water generator was used to treat alfalfa seeds and sprouts inoculated with a five-strain cocktail of nalidixic acid resistant *Escherichia coli* O157:H7. EO water had a pH of 2.6, an oxidation-reduction potential of 1150 mV and about 50 ppm free chlorine. The percentage reduction in bacterial load was determined for reaction times of 2, 4, 8, 16, 32, and 64 min. Mechanical agitation was done while treating the seeds at different time intervals to increase the effectiveness of the treatment. Since *E. coli* O157:H7 was released due to soaking during treatment, the initial counts on seeds and sprouts were determined by soaking the contaminated seeds/sprouts in 0.1% peptone water for a period equivalent to treatment time. The samples were then pummeled in 0.1% peptone water and spread plated on tryptic soy agar with 5 microg/ml of nalidixic acid (TSAN). Results showed that there were reductions between 38.2% and 97.1% (0.22-1.56 log₁₀ CFU/g) in the bacterial load of treated seeds. The reductions for sprouts were between 91.1% and 99.8% (1.05-2.72 log₁₀ CFU/g). An increase in treatment time increased the percentage reduction of *E. coli* O157:H7. However, germination of the treated seeds reduced from 92% to 49% as amperage to make EO water and soaking time increased. EO water did not cause any visible damage to the sprouts.

PMID: 12915034 [PubMed - indexed for MEDLINE]

5. Inactivation of *Escherichia coli* (O157:H7) and *Listeria monocytogenes* on plastic kitchen cutting boards by electrolyzed oxidizing water.

Venkitanarayanan KS, Ezeike GO, Hung YC, Doyle MP.

Department of Animal Science, University of Connecticut, Storrs 06269, USA.

One milliliter of culture containing a five-strain mixture of *Escherichia coli* O157:H7 (approximately 10(10) CFU) was inoculated on a 100-cm² area marked on unscarred cutting boards. Following inoculation, the boards were air-dried under a laminar flow hood for 1 h, immersed in 2 liters of electrolyzed oxidizing water or sterile deionized water at 23 degrees C or 35 degrees C for 10 or 20 min; 45 degrees C for 5 or 10 min; or 55 degrees C for 5 min. After each temperature-time combination, the surviving population of the pathogen on cutting boards and in soaking water was determined. Soaking of inoculated cutting boards in electrolyzed oxidizing water reduced *E. coli* O157:H7 populations by ≥ 5.0 log CFU/100 cm² on cutting boards. However, immersion of cutting boards in deionized water decreased the pathogen count only by 1.0 to 1.5 log CFU/100 cm². Treatment of cutting boards inoculated with *Listeria monocytogenes* in electrolyzed oxidizing water at selected temperature-time combinations (23 degrees C for 20 min, 35 degrees C for 10 min, and 45 degrees C for 10 min) substantially reduced the populations of *L. monocytogenes* in comparison to the counts recovered from the boards immersed in deionized water. *E. coli* O157:H7 and *L. monocytogenes* were not detected in electrolyzed oxidizing water after soaking treatment, whereas the pathogens survived in the deionized water used for soaking the cutting boards. This study revealed that immersion of kitchen cutting boards in electrolyzed oxidizing water could be used as an effective method for inactivating foodborne pathogens on smooth, plastic cutting boards.

PMID: 10456736 [PubMed - indexed for MEDLINE]

6. The bactericidal effects of electrolyzed oxidizing water on bacterial strains involved in hospital infections.

Vorobjeva NV, Vorobjeva LI, Khodjaev EY. *Artif Organs*. 2004 Jun;28(6):590-2.

Department of Physiology of Microorganisms, Biology Faculty, Moscow State University, Lenin Hills 1/12, Moscow 119992, Russia. nvvorobjeva@mail.ru

The study is designed to investigate bactericidal actions of electrolyzed oxidizing water on hospital infections. Ten of the most common opportunistic pathogens are used for this study. Cultures are inoculated in 4.5 mL of electrolyzed oxidizing (EO) water or 4.5 mL of sterile deionized water (control), and incubated for 0, 0.5, and 5 min at room temperature. At the exposure time of 30 s the EO water completely inactivates all of the bacterial strains, with the exception of vegetative cells and spores of bacilli which need 5 min to be killed. The results indicate that electrolyzed oxidizing water may be a useful disinfectant for hospital infections, but its clinical application has still to be evaluated.

PMID: 15153153 [PubMed - in process]

7. Effect of electrolyzed oxidizing water and hydrocolloid occlusive dressings on excised burn-wounds in rats.

Chin J *Traumatol*. 2003 Aug 1;6(4):234-7.

Xin H, Zheng YJ, Hajime N, Han ZG.

Department of Thoracic Surgery, China-Japan Union Hospital, Jilin University, Jilin 130031, China. xinhua7254@yahoo.com.cn

OBJECTIVE: To study the efficacy of electrolyzed oxidizing water (EOW) and hydrocolloid occlusive dressings in the acceleration of epithelialization in excised burn-wounds in rats.

METHODS: Each of the anesthetized Sprague-Dawley rats (n=28) was subjected to a third-degree burn that covered approximately 10% of the total body surface area. Rats were assigned into four groups: Group I (no irrigation), Group II (irrigation with physiologic saline), Group III (irrigation with EOW) and Group IV (hydrocolloid occlusive dressing after EOW irrigation). Wounds were observed macroscopically until complete epithelialization was present, then the epithelialized wounds were examined microscopically. **RESULTS:** Healing of the burn wounds was the fastest in Group IV treated with hydrocolloid occlusive dressing together with EOW. Although extensive regenerative epidermis was seen in each Group, the proliferations of lymphocytes and macrophages associated with dense collagen deposition were more extensive in Group II, III and IV than in Group I. These findings were particularly evident in Group III and IV. **CONCLUSIONS:** Wound Healing may be accelerated by applying a hydrocolloid occlusive dressing on burn surfaces after they are cleaned with EOW.

PMID: 12857518 [PubMed - indexed for MEDLINE]

8. Effect of electrolyzed water on wound healing.

Artif Organs. 2000 Dec;24(12):984-7.

Yahagi N, Kono M, Kitahara M, Ohmura A, Sumita O, Hashimoto T, Hori K, Ning-Juan C, Woodson P, Kubota S, Murakami A, Takamoto S.

Department of Anesthesiology, Teikyo University Mizonokuchi Hospital, Tokyo, Japan.
naokiyah@aol.com Electrolyzed water accelerated the healing of full-thickness cutaneous wounds in rats, but only anode chamber water (acid pH or neutralized) was effective. Hypochlorous acid (HOCl), also produced by electrolysis, was ineffective, suggesting that these types of electrolyzed water enhance wound healing by a mechanism unrelated to the well-known antibacterial action of HOCl. One possibility is that reactive oxygen species, shown to be electron spin resonance spectra present in anode chamber water, might trigger early wound healing through fibroblast migration and proliferation.

PMID: 11121980 [PubMed - indexed for MEDLINE]

9. Decomposition of ethylene, a flower-senescence hormone, with electrolyzed anode water. Biosci Biotechnol Biochem.

2003 Apr;67(4):790-6.

Harada K, Yasui K.

Department of Research and Development, Hokkaido Electric Power Co., Inc., 2-1 Tsuishikari, Ebetsu, Hokkaido 067-0033, Japan. kharada@h1.hotcn.ne.jp

Electrolyzed anode water (EAW) markedly extended the vase life of cut carnation flowers. Therefore, a flower-senescence hormone involving ethylene decomposition by EAW with potassium chloride as an electrolyte was investigated. Ethylene was added externally to EAW, and the reaction between ethylene and the available chlorine in EAW was examined. EAW had a low pH value (2.5), a high concentration of dissolved oxygen, and extremely high redox potential (19.2 mg/l and 1323 mV, respectively) when available chlorine was at a concentration of about 620 microns. The addition of ethylene to EAW led to ethylene decomposition, and an equimolar amount of ethylene chlorohydrine with available chlorine was produced. The ethylene chlorohydrine production was greatly affected by the pH value (pH 2.5, 5.0 and 10.0 were tested), and was faster in an acidic solution. Ethylene chlorohydrine was not produced after ethylene had been added to EAW at pH 2.6 when available chlorine was absent, but was produced after potassium hypochlorite had been added to such EAW. The effect of the pH value of EAW on the vase life of cut carnations was compatible with the decomposition rate of ethylene in EAW of the same pH value. These results suggest that the effect of EAW on the vase life of cut carnations was due to the decomposition of ethylene to ethylene chlorohydrine by chlorine from chlorine compounds.

PMID: 12784619 [PubMed - indexed for MEDLINE]

10. Use of Ionized water in hypochlorhydria or achlorhydria

Prof. Kuninaka Hironage, Head of Kuninaka Hospital "Too many fats in the diets, which lead to the deposition of cholesterol on the blood vessels, which in turn constrict the blood flow, cause most illnesses such as high blood pressure. In accordance with the theory of Professor Gato of Kyushu University on Vitamin K (because vitamin K enables the blood calcium to increase), or the consumption of more antioxidant water, the effectiveness of the increase in the calcium in high blood pressure is most significant. The consumption of alkaline antioxidant water for a period of 2 to 3 months, I have observed the blood pressure slowly drop, due to the water's solvent ability, which dissolves the cholesterol in the blood vessels."

11. Use of Ionized water for gynecological conditions

Prof. Watanabe Ifao, Watanabe Hospital

"Ionized alkaline antioxidant water improves body constituents and ensures effective healing to many illnesses. The uses of antioxidant water in gynecological patients have proved to be very effective. The main reason for its effectiveness is that this water can neutralize toxins.

When given antioxidant water to pre-eclamptic toxemia cases, the results are most significant. During my long years of servicing the pre-eclamptic toxemia cases, I found that the women with pre-eclamptic toxemia who consumed antioxidant water tend to deliver healthier babies with stronger muscles. A survey report carried out on babies in this group showed intelligence above average."

12. Toxin Neutralization

Prof. Kuwata Keijiroo, Doctor of Medicine

"In my opinion, the wonder of antioxidant water is the ability neutralizes toxins, but it is not a medicine. The difference is that the medicine can only apply to each and individual case, whereas the antioxidant water can be consumed generally and its neutralizing power is something which is very much unexpected. Now, in brief, let me introduce to you a heart disease case and how it was cured.

The patient was a 35 years old male suffering from vascular heart disease. For 5 years, his sickness deteriorated. He was in the Setagays Government Hospital for treatment.

During those 5 years, he had been in and out of the hospital 5 to 6 times. He had undergone high tech examinations such as angiogram by injecting VINYL via the vein into the heart. He consulted and sought treatment from many good doctors where later he underwent a major surgical operation. Upon his discharge from the hospital, he quit his job to convalesce. However, each time when his illness relapsed, the attack seemed to be even more severe.

Last year, in August, his relatives were in despair and expected he would not live much longer. It so happened at that time that the victim's relative came across antioxidant water processor. His illness responded well and he is now on the road to recovery."

(In the United States, cardiovascular diseases account for more than one-half of the approximate 2 million deaths occurring each year.... It is estimated that optimal conditioning of drinking water could reduce this cardiovascular disease mortality rate by as much as 15 percent in the United States)

From: Report of the Safe Drinking Water Committee of the National Academy of Sciences, 1977

13. Eczema

Prof. Tamura Tatsuji, Keifuku Rehabilitation Center

"Eczema is used to describe several varieties of skin conditions, which have a number of common features. The exact cause or causes of eczema are not fully understood. In many cases, eczema can be attributed by external irritants.

Let me introduce a patient who recovered from skin disease after consuming the antioxidant water. This patient suffered 10 years of eczema and could not be cured effectively even under specialist treatment. This patient, who is 70 years of age, is the president of a vehicle spare parts company. After the war, his lower limbs suffered acute eczema, which later became chronic. He was repeatedly treated in a specialist skin hospital.

The left limb responded well to treatment, but not so on the right limb. He suffered severe itchiness, which, when scratched led to bleeding. During the last 10 years, he was seen and treated by many doctors. When I first examined him, his lower limb around the joints was covered with vesicles. Weeping occurred owing to serum exuding from the vesicles.

I advised him to try consuming antioxidant water. He bought a unit and consumed the antioxidant water religiously and used the acidic water to bathe the affected areas. After 2 weeks of treatment the vesicles dried up. The eczema was completely cleared without any relapse after 1 month."

14. Allergies

Prof. Kuninaka Hironaga, Head of Kuninaka Hospital

"Mr. Yamada, the head of Police Research Institute, suffered from severe allergy. He was treated repeatedly by skin specialist, but with no success. Then he started consuming antioxidant water. The allergy responded very well and was soon completely cured. No relapse had occurred, although he had taken all kinds of food. He was most grateful and excited about this treatment.

As for myself, I had also suffered severe allergy. Ever since I began to consume antioxidant water, the allergy has recovered. Since then, I started a research on the effectiveness of antioxidant water.

I discovered that most allergies are due to acidification of body condition and is also related to consuming too much meat and sugar. In every allergy case, the patient's antioxidant minerals are excessively low which in turn lower the body resistance significantly. The body becomes overly sensitive and develops allergy easily. To stabilize the sensitivity, calcium solution is injected into the vein. Therefore, it is clear that the antioxidant water has ionic calcium, which can help alleviate allergy.

The ionic calcium not only enhances the heart, urination, and neutralization of toxins but controls acidity. It also enhances the digestive system and liver function. This will promote natural healing power and hence increase its resistance to allergy. In some special cases of illness, which do not respond to drugs, it is found, it is found to respond well to antioxidant water."

15. Digestive Problems

Prof. Kogure Keizou, Kogure Clinic of Juntendo Hospital

"The stomach is readily upset both by diseases affecting the stomach and by other general illnesses. In addition, any nervous tension or anxiety frequently causes gastric upset, vague symptoms when this information is under some strain.

The important role of antioxidant water in our stomach is to neutralize the secretion and strengthen its functions. Usually, after consuming the antioxidant water for 1 to 3 minutes, the gastric juice increase to 1? times. For those suffering from hypochlorhydria or achlorhydria (low in gastric juice) the presence of antioxidant water will stimulate the stomach cells to secrete more gastric juice. This in turn enhances digestion and absorption of minerals.

However, on the other hand, those with hyperchlorhydria (high in gastric juice), the antioxidant water neutralizes the excessive gastric juice. Hence, it does not create any adverse reaction.

According to the medical lecturer from Maeba University, the pH of the gastric secretion will still remain normal when antioxidant water is consumed. This proves that the ability of the antioxidant water is able to neutralize as well as to stimulate the secretion."

16. Diabetes

Prof. Kuwata Keijiroo, Doctor of Medicine

"When I was serving in the Fire Insurance Association, I used to examine many diabetic patients. Besides treating them with drugs, I provided them with antioxidant water. After drinking antioxidant water for one month, 15 diabetic patients were selected and sent to Tokyo University for further test and observations.

Initially, the more serious patients were a bit apprehensive about the treatment. When the antioxidant water was consumed for some time, the sugar in the blood and urine ranged from a ratio of 300 mg/l to 2 mg / dc. There was a time where the patient had undergone 5 to 6 blood tests a day and detected to be within normal range. Results also showed that even 1 hour after meals, the blood sugar and urine ratio was 100 mg/dc: 0 mg/dc . The sugar in the urine has completely disappeared."

NOTE:

More Americans than ever before are suffering from diabetes, with the number of new cases averaging almost 800,000 each year. The disease has steadily increased in the United States since 1980, and in 1998, 16 million Americans were diagnosed with diabetes (10.3 million diagnosed; 5.4 million undiagnosed). Diabetes is the seventh leading cause of death in the United States, and more than 193,000 died from the disease and its related complication in 1996.

..... The greatest increase - 76 percent - occurred in people age 30 to 30.

From: U. S. Department of Health and Human Services, October 13, 2000 Fact Sheet.

17. Use of Ionized water in treating Acidosis

Prof. Hatori Tasutaroo, Head of Akajiuji Blood Centre, Yokohama Hospital, Faitama District

"Due to a higher standard of living, our eating habits have changed. We consume too much proteins, fats and sugar. The excess fats and carbohydrates are in the body as fats. In the present lifestyles, Americans are more extravagant on food compared to the Japanese. Due to this

excessive intake obesity is a significant problem. Normally, one out of five males and one out of four females is obese.

The degree of "burn-out" in food intake largely depends on the amount on intake of vitamins and minerals. When excessive intake of proteins, carbohydrates and fats occurs, the requirement for vitamins and minerals increases. However, there is not much research carried out pertaining to the importance of vitamins and minerals.

Nowadays, many people suffer from acidification that leads to diabetes, heart diseases, cancer, liver and kidney diseases. If our food intake can be completely burned off, then there is no deposition of fats. Obviously, there will be no acidification problem and hence there should not be any sign of obesity.

The antioxidant water contains an abundance of ionic calcium. This ionic calcium helps in the "burn-off" process. By drinking antioxidant water, it provides sufficient minerals for our body. As a result, we do not need to watch our diet to stay slim.

Hence, antioxidant water is a savior for those suffering from obesity and many adult diseases, providing good assistance in enhancing good health."