

## ***Clinical evaluation of alkaline ionized water for abdominal complaints:***

### **Placebo controlled double blind tests**

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Effect of alkaline ionized water on abdominal complaints was evaluated by placebo controlled double blind tests. Overall scores of improvement using alkaline ionized water marked higher than those of placebo controlled group, and its effect proved to be significantly higher especially in slight symptoms of chronic diarrhoea and abdominal complaints in cases of general malaise. Alkaline ionized water group did not get interrupted in the course of the test, nor did it show neither serious side effects nor abnormal test data. **It was confirmed that alkaline ionized water is safer and more effective than placebos.**

### ***Summary***

Effect of alkaline ionized water on abdominal complaints was clinically examined by double blind tests using clean water as placebo. **Overall improvement rate was higher for alkaline ionized water group than placebo group and the former proved to be significantly more effective than the other especially in cases of slight symptoms.** Examining improvement rate for each case of chronic diarrhoea, constipation and abdominal complaints, alkaline ionized water group turned out to be more effective than placebo group for chronic diarrhoea, and abdominal complaints. The test was stopped in one case of chronic diarrhoea, among placebo group due to exacerbation, whereas alkaline ionized water group did not stop testing without serious side effects or abnormal test data in all cases. **It was confirmed that alkaline ionized water is more effective than clean water against chronic diarrhoea, abdominal complaints and overall improvement rate (relief of abdominal complaints) and safer than clean water.**

### ***Introduction***

Since the approval of alkaline ionized water electrolyzers by Pharmaceutical Affairs Law in 1966 for its antacid effect and efficacy against gastrointestinal disorders including hyperchylia, indigestion, abnormal gastrointestinal fermentation and chronic diarrhoea, they have been extensively used among patients. However, medical and scientific evaluation of their validity is not established. In our study, we examined clinical effect of alkaline ionized water on gastrointestinal disorders across many symptoms in various facilities. Particularly, we studied safety and usefulness of alkaline ionized water by double-blind tests using clean water as a control group.

### ***Test subjects and methods***

163 patients (34 men, 129 women, age 21 to 72, average 38.6 years old) of indigestion, abnormal gastrointestinal fermentation (with abnormal gas emission and rugitus) and abdominal complaints caused by irregular defecation (chronic diarrhoea, or constipation) were tested as subjects with good informed consent. Placebo controlled double blind tests were conducted using alkaline ionized water and clean water at multiple facilities. An alkaline ionized water electrolyser sold commercially was installed with a pump driven calcium dispenser in each of the subject homes. Tested alkaline ionized water had pH at 9.5 and calcium concentration at 30ppm. Each subject in placebo group used a water purifier that has the same appearance as the electrolyser and produces clean water. The tested equipment was randomly assigned by a controller who scaled off the key code which was stored safely until the tests were completed and the seal was opened again.

Water samples were given to each patient in the amount of 200ml in the morning with the total of 500ml or more per day for a month. Before and after the tests, blood, urine and stool were tested and a log was kept on the subjective symptoms, bowel movements and accessory symptoms. After the tests, the results were analyzed based on the log and the test data.

## **Test Results**

### **1. Symptom**

Among 163 tested subjects, alkaline ionized water group included 84 and placebo group 79. Background factors such as gender, age and basal disorders did not contribute to significant difference in the results.

### **2. Overall improvement rate**

As to overall improvement rate of abdominal complaints, alkaline ionized water group had 2 cases of outstanding improvement (2.5%), 26 cases of fair improvement (32.1%), 36 cases of slight improvement (44.4%), 13 cases of no change (16%) and 4 cases of exacerbation (4.9%), whereas placebo group exhibited 4 (5.2%), 19 (24.7%), 27 (35.1%), 25 (32.5%) and 2 cases (2.6%) for the same category. Comparison between alkaline ionized water and placebo groups did not reveal any significant difference at the level of 5% significance according to the Wilcoxon test, although alkaline ionized water group turned out to be significantly more effective than placebo group at the level of p value of 0.22. Examining overall improvement rates by a 7, 2 test (with no adjustment for continuity) between the effective and no effective groups, alkaline ionized water group had 64 (79%) of effective cases and 17 cases (21%) of non effective cases, whereas placebo group had 50 (64.9%) and 27 (35.1%) cases respectively. The result indicated that alkaline ionized water group was significantly more effective than placebo group at the level of p value of 0.048. Looking only at 83 slight cases of abdominal complaints, overall improvement rate for alkaline ionized water group (45 cases) was composed of 11 cases (24.2%) of fair improvement, 22 cases (48.9%) of slight improvement, 17 cases (44.7%) of no change and 3 cases (6.7%) of exacerbation, whereas placebo group (38 cases) had 3 (7.8%), 17 (44.7%), 17 (44.7%) and 1 (2.6%) cases for the same category. Alkaline ionized water group was significantly more effective than placebo group according to the comparison between the groups (p value = 0.033).

### **3. Improvement rate by basal symptom**

Basal symptoms were divided into chronic diarrhoea, constipation and abdominal complaints (dyspepsia) and overall improvement rate was evaluated for each of them to study effect of alkaline ionized water. In case of chronic diarrhoea, alkaline ionized water group resulted in 94.1% of effective cases and 5.9% of non effective cases. Placebo group came up with 64.7% effective and 35.3% non effective. These results indicate alkaline ionized water group proved to be significantly more effective than placebo group. In case of slighter chronic diarrhoea, comparison between groups revealed that alkaline ionized water group is significantly more effective than placebo group (p=0.015). In case of constipation, alkaline ionized water group consisted of 80.5% of effective and 19.5% of non effective cases, whereas placebo group resulted in 73.3% effective and 26.3 non effective. As to abdominal complaints (dyspepsia), alkaline ionized water group had 85.7% of effective and 14.3% non effective cases while placebo group showed 47.1% and 62.9% respectively. Alkaline ionized water group proved to be significantly more effective than placebo group (p=0.025).

### **4. Safety**

Since one case of chronic diarrhoea, in placebo group saw exacerbation, the test was stopped. There were no such cases in alkaline ionized water group. Fourteen cases of accessory symptoms, 8 in alkaline ionized water group and 6 in placebo group, were observed, none of which were serious. 31 out of 163 cases (16 in alkaline ionized water group, 15 in placebo group) exhibited fluctuation in test data, although alkaline ionized water group did not have any problematic fluctuations compared to placebo group. Two cases in placebo group and one case in alkaline ionized water group have seen K value of serum climb up and resume to normal value after re testing which indicates the value changes were temporary.

## **Conclusion**

As a result of double blind clinical tests of alkaline ionized water and clean water, alkaline ionized water was proved to be more effective than clean water against chronic diarrhoea, abdominal complaints (dyspepsia) and overall improvement rate (relief from abdominal complaints). Also, safety of alkaline ionized water was confirmed which clinically verifies its usefulness.