



Review and Acceptance of Test Report of Clinical Study on Foam with Biocrystal[®] Mixture Conducted by Bion Institute

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I. Initial Review

Subtle energy technologies may have effects on organisms, including humans, although these energies cannot be measured using conventional physical instruments. Bion Institute is one of the few laboratories in the world specializing in measuring the biological effects of such subtle energies. In this study, they explore the physiological effects of the Foam with Biocrystal[®] Mixture from Biocrystal Technologies on human subjects seated on the foam used as cushioning material on chairs.

Careful control of ambient electromagnetic fields was done by removing active devices from the testing room, although measurements of conventional 50 Hz electric, magnetic, and electromagnetic fields (including microwave, radiofrequency) were not indicated. However, such measurements could subsequently be averaged over time and added to the report.

The study was well designed; it was a double-blind, randomized, sham-controlled trial, which is the gold standard of clinical trials. It involved 10 participants, presumably all healthy, of both genders, who were monitored via peripheral physiological measures. The age range and mean age of the participants was not reported; however, this could be added to the report to better characterize the sample. Although the sample was small with N=10, this is a typical size for an initial clinical study to look for an effect.

Each participant was tested while seated on the foam placed on wooden chairs and covered with cotton, with the sham and active foam tests performed on different days. A reasonable period of thirty minutes was used as the test period. Standard placement of electrodes on the left and right arms of participants was utilized, and participants were monitored noninvasively in the resting state for heart rate, muscle activity, skin conductance, skin temperature, and expansion of the thorax to monitor respiration rate and depth. Data were collected each second, exported to statistical software, graphed, and analyzed via appropriate statistical tests. Physiological differences for sham foam and active product were calculated for the first and second half of the measurement intervals and comparison was also made to long-term effects.

Results showed complex changes in the physiological measures. The Biocrystal[®] foam produced significant differences in respiration rate and body temperature, with some differential results in the first and second half of the measurement intervals. It appears that the Biocrystal[®] foam may produce greater relaxation, since heart rate, muscle activity and skin conductance decreased. Although respiration rate increased, which suggests higher metabolism via greater oxygen consumption, skin temperature decreased, which appears to contradict the latter.

I do not understand the statements in the report regarding greater-than-normal ambient electromagnetic pollution in this study, because the ambient electromagnetic fields appear to be well controlled in this study for both sham and active product, because it was reported that active emitters except for the recording computer had been removed from the test site. However, the levels of the ambient fields were not reported.

The study concludes that Foam with Biocrystal[®] produced small but positive effects on human subjects compared to control foam, several of which were statistically significant. This study was rigorously controlled to eliminate potential confounding variables. Nonetheless, because multiple physiological parameters were assessed in a small sample population, it is possible that some of the statistically significant findings may nonetheless be due to chance.

Although the physiological responses associated with use of Biocrystal[®] Foam were complex, the results suggest that this product may help produce greater relaxation. Additional studies are recommended to confirm the relaxation effect of Biocrystal[®] Foam. For instance, autonomic nervous system function of participants could be measured via heart rate variability, using the same type of research protocol and design. In another study, subjects could be exposed to a known stressor to look for greater resistance to stress, that is, a reduced stress response, while seated on Biocrystal[®] Foam compared to sham. A larger sample population is also recommended for future studies.

II. Response from Bion Institute

Regarding **environmental electromagnetic load** for this report it is no more possible but we shall do it in the future. We assumed that variations in the electromagnetic background (ELF from electric grid, various microwaves, mostly from mobile antennas etc.) represent an uncontrollable influence that should be averaged through the whole test. This is a normal background that is expected to be similar to situations where the tested product would be set. To follow and analyze the background EM noise on a very broad span of frequencies (ELF - 5 GHz) would also mean additional costs that ordinary customers are not willing to cover. But we will nevertheless think about this in the future.

The age range of testees is given on page 4. Their estimated **average age** is around 35 years.

Regarding the **contradiction between oxygen consumption and temperature fall**, in many tests we found that even supposedly more correlated parameters, for instance heart rate and breathing rate can be quite uncorrelated.

Regarding **greater-than-normal ambient electromagnetic pollution** as already said stemming from our many years of experiences we assume that the background electromagnetic noise comes to almost equal values with the testing and the control group. This can be seen also on Figure 3 in the report where the long-term sham exposure curve and control curve from this testing assume almost equal values. In this respect, the temperature result was a surprise to us; we hypothesized that there was some higher value in the background electromagnetic noise that crept on the temperature parameter which is more variable (it is about surface temperature not

the core one) than the breathing rate one. But this is only an assumption, the reason could have been different.

Regarding the statement that **statistically significant findings may nonetheless be due to chance**. Of course, any statistical, even a highly significant result can be a consequence of a chance which probability equals to p-value. To lower this probabilities in our evaluations we perform Holm-Bonferroni corrections and even more, demand at least three parameters out of eight to show the statistical significant results (after the before mentioned correction). Besides, because of a small sample we do not use the average but the median for statistical analysis.

We gladly accept your recommendations for future tests however their realization depends from the interests and financial capabilities of our customers.

III. Final Review and Acceptance

I, Beverly Rubik, have read and accept the response of Bion Institute to my initial review, which clarifies several important points. I hereby fully accept their study and report.

SIGNED: *Beverly Rubik* _____

Date: 23 May 2017