

Structured water and its effect on the cell proliferation rate

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Recently, G. Pollack published a book about the structured water. He claimed that there is a fourth phase of water and it has quite different properties compare to ordinary water. It was observed to be formed on the interface of hydrophilic materials and water. One of the most striking phenomena is that electron charge is generated during the structuralization of water. Actually, the structured water showed an electric potential as high as 200 mV ranges depending on the distance from the surface of hydrophilic materials.

We developed a special ceramic powder which radiates reductive radiation energy. Infrared wave was detected for the range from 7.5 μm to 13 μm and ultraviolet ray with a peak of 370 nm was observed also. From the measurement of oxidation and reduction potential of water, which was treated in a non-contact manner, it was found that the radiation has a reductive property to reduce the ORP, in other words, increasing the reductive capability of water. Also, it was observed that the dielectric constant of water was increased by about 8 % through non-contact treatment of water for 17 days. The increase in dielectric constant indicates the increase in charge potential of water and this means that the water was structured in a way as Pollack proposed, i.e., separation of electrons and hydrogen ion.

In our case, the water structure is expected to appear in a three-dimensional morphologies rather than two-dimensional thin film shapes. Cryo-SEM was adopted to observe the three-dimensional structure of the water treated in a non-contact manner compare to ordinary water. As shown in the figure, it showed clearly different structure compared to ordinary water (a). It is composed with high-density ice walls as shown in the figures (b) and (c) with the bright reflecting surface. It looks like a sponge and we named it as a PBL sponge model of water structure, meaning Pollack-Bahng-Lee. This may indicate that water is structured in a mixture of two kinds of water, i.e., wall is composed with high density structured water and ordinary water in between. This result also implies that water is structured in micron order range rather than at molecular level as was proposed in the cluster model.

To observe the property of structured water, a culture medium was prepared with structured water for proliferation rate measurement. To our surprise, the proliferation rate of macrophage cell was increased almost double. This tendency was observed for other three different kinds of cells. Also, preliminary experimental results indicate that the mitochondria membrane potential is increased by non-contact treatment.

Fig. (a) Ice from ordinary water, (b) and (c) Ice from structured water. Scale bar; 1 μm , 1 μm , and 5 μm , from left.

