



ACUPUNCTURE

## The Role of Structured Water in Acupuncture (Pt. 2)

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Editor's Note: [Part 1](#) of this article ran in the April issue. The article is based on the author's new book, *Scientific Acupuncture*.

### Forming the Meridians and Driving the Flow

So far, I have thought of the meridians as being formed by the difference in charge between the head and spinal cord, and the hands and feet. It is supposed that lines up the extracellular spaces. I have clinical evidence that some ordering does occur or my treatment would not have worked; but it did.

What if there is something else that enhances this effect and also partly drives the flow? The formation of EZ ["exclusion zone," as introduced in part 1] surfaces on the cell walls can be expected, but with holes to allow movement of nutrients and waste products between inside and outside the cell. These EZ zones can also be expected to span the gaps between the cells, making the channels better defined. That might also be driven by a voltage applied along the meridian.

A large percentage of the surface of cell walls is hydrophilic, which would drive EZ formation. But the surface is broken up by other molecules, which then allows for the holes in the EZ that are required for proper membrane function.

In addition, forming channels of EZ material can induce flow in the channel by positively charged protons and H<sub>3</sub>O molecules that collect in the middle of the channel. This movement goes toward the center because the charge distribution inside the body is opposite that on the surface. Therefore, the flow will be toward the center of the body by the positively charged bulk water being attracted to the negatively charged head and spine, which is what is observed.

This is all just speculation on my part, but it does fit the facts as I know them. And this provides

another possible source of the flow in the meridians.

Basically, what I envision as happening is this: The formation of the EZ layers releases hydrogen atoms, which then connects to  $H_2O$  in the channel to form  $H_3O^+$ . These molecules are attracted to the negative charge in the center of the body, which then causes the flow to go in that direction instead of the other direction.

The other force driving the flow is the difference in concentration of  $H^3O$  between inside the tube and outside the tube. The difference in charge is what drives the flow in the direction it winds up going. Measuring the flow rate induced by this mechanism by experimentation can determine what percentage of the observed flow rate can be attributed to this mechanism.

In addition, the EZ layer consists of many loosely bound electrons, causing it to be a very good conductor of electricity. Since the electrons can flow in any direction in the EZ, it behaves like an "N" type semiconductor!

#### Formation of the Meridians Themselves

In addition to my thought that the electric field produced by the body (and even by the embryo) caused the cells to line up and make the meridians (following the electric lines of force, similar to how iron filings line up in a magnetic field), structured water may be playing a role here, too. Let me explain how.

If the membranes of cells are mostly or even partly made up of hydrophilic surfaces, then they will automatically grow EZ layers and thus put positive ions in the extracellular spaces. Since like charges repel, that will push apart the cells, like a balloon blowing up. That is one force that the structured water would cause. In addition,

The positive charge that accumulates in the extracellular spaces also would be both attracted by the negative charge in from the head and spinal cord, and repelled by the positive charge in the hands and feet (the charge is opposite from the surface of the body).

Since like charges repel, that would put a force on the extracellular fluid to move toward the chest. The combined forces could be enough to further align the meridians. The three forces could be enough to make the meridians to form in the first place. At least it seems plausible to me.

Another thing the EZs might be able to explain is the low current level to induce the increased ATP levels. It may be that at a high enough current level, you break the EZ layer bonds, thus reducing EZ stability. If the low current through the EZ layers is responsible for providing the energy for the increased production of ATP, then higher currents breaking the EZ structure would disrupt that process.

#### A Few Simple Experiments

An easy experiment would be to run current through an EZ layer and see what happens at different current levels. Another simple experiment would be to put acupuncture needles in Jello and then apply a polarized waveform or a DC voltage to the needles. You should see water form at the positive pole. The effect may even be current related. Since the effect depends on removal of charge, it will not happen with an AC waveform.

To show the effect of current on formation of EZ, You would use pure water with microparticles mixed in and set to form an EZ layer at the top layer of water, Then place acupuncture needles in

the EZ layer and apply AC, DC and polarized waveforms at different current levels, and see what happens.

The only problem is that the EZ layer is relatively small and would need a good microscope setup to see. I suspect growth of the EZ layer will occur with all low current applications, since the EZ will absorb the electromagnetic energy and grow. But at a certain current level, it will stop. I suspect that level will correspond to microcurrent levels. These are easy experiments to do, and I hope to do them myself sometime soon. (Just more projects to put my already overflowing plate; but stay tuned!)

### Why Does Inserting a Needle Into the Belly of a Muscle Relax It?

I have long known of this effect and used it in my practice, but never knew the exact mechanism involved. It turns out that it is due to phase transitions between bulk water and structured water.

The transition from bulk water to structured water lengthens all three parts of the sarcomere, whereas the transition from structured water to bulk water shortens them. So, when you stick a needle in the belly of a muscle, since the needle is hydrophilic it will trigger the transition from bulk water to structured water.

This reaction can then spread to the rest of the muscle, relaxing it. So, now we have the actual mechanism involved.

### Why Does Heat Relax a Muscle?

In a similar way as above, heat (infrared radiation) also triggers structured water formation, thus relaxing it. Heat would work better than a needle since the effect would be more spread out. Neither effect will last that long, since once the stimulus is removed, the tissues will return to the balanced state between structured and unstructured water.

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