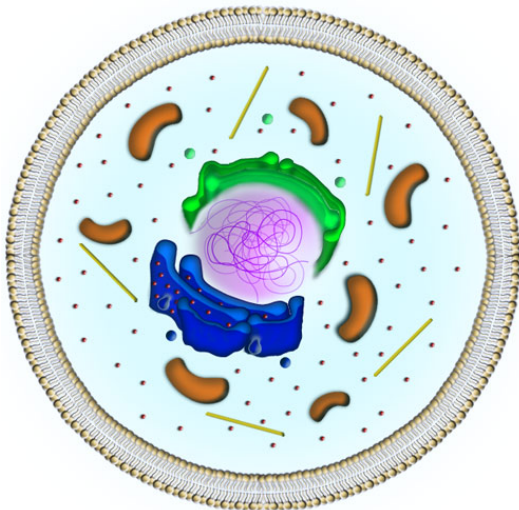




How Does The Biopton Work?

The most important aspect of the Biopton devices is the polarization of the emitted light. Polarized light can be thought of as charged light because of the effects it elicits on any living cell. All human cells have a cellular (plasma) membrane enveloping their contents. They also have organs just like we do, but because they are so tiny, they are called organelles. All of these organelles have a particular function. If this function is impaired or absent then the metabolism of the cell is damaged or stopped completely. This results in cell death, either immediately or over a period of time, depending on the extent of the dysfunction. The plasma membrane which envelops the cellular contents is much like our skin. If our skin is cut we bleed, the same thing happens to a cell if its membrane is ruptured. If we bleed long enough or too much all at once, we die. The same thing happens to a cell. Most of the organelles are also made of a similar



membrane which separates the reactions which go on inside them from the rest of the cell, just like our organs are separated by various other forms of tissues and membranes. If the food from our stomach ended up in our lungs we wouldn't get much eating done, or if we tried to breathe with our stomach we wouldn't get much breathing done. So these membranes serve to separate the functions of the various organelles in a cell so that they don't interfere with one another. Here is a summary of the functions of a few major organelles which are encased in a membrane.

The Mitochondria:

This is arguably the most basic and perhaps the most important part of a cell. It is the powerhouse of all major metabolic mechanisms or pathways. The mitochondria charge up used batteries so that they can be used again. The cell has a molecule called adenosine tri-phosphate (ATP) which it uses as batteries. ATP is the equivalent of a charged up battery which can be used to power processes. Once all the energy is depleted from this molecule, it becomes adenosine di-phosphate (ADP) which is the equivalent of an empty battery. This

ADP then travels to the mitochondria where it is recharged back into ATP. This recharging cycle takes place across the mitochondrial membrane. Certain channels which are present in the membrane allow for the passage of substances into and out of the mitochondria. If this membrane is disrupted then the recharging cycle cannot take place and all the metabolic processes going on inside a cell grind to a halt because they lack the power to run.

The Rough Endoplasmic Reticulum:

The rough endoplasmic reticulum (RER) is very important in the production of all cellular protein. When DNA transcripts reach the ribosome's which stud the surface of the RER, the information contained on the mRNA of these DNA transcripts are read and made into proteins. The RER, like the mitochondria, are also made of a membrane which holds these ribosomes. It also pinches off small buds off of its membrane to create small bags or vesicles which carry the proteins produced inside the RER to the appropriate target. If this membrane is disrupted the ribosomes might be in the wrong position to do their job, and these vesicles might be unable to form, thus the protein which are needed elsewhere are stuck inside the RER.

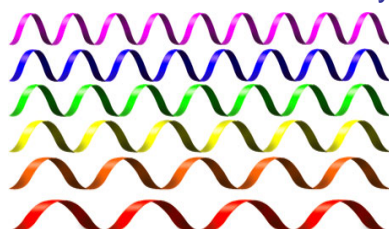
The Smooth Endoplasmic Reticulum:

The smooth endoplasmic reticulum (SER) is considered smooth because it is not studded with ribosomes like the RER is. The SER is the site of lipid (fat) metabolism, synthesis of hormones, transport of fats . . .

The membrane which surrounds the SER is important for the same reasons as it is to all other organelles - to keep the cycles which it runs separate from those run in other parts of the cell. Also in certain cells such as muscle cells the SER (also called the sarcoplasmic reticulum) controls which ions need to be pumped into the cell. These ions are initially stored in the SER. This process happens in muscle cells for example, to elicit contraction and relaxation of the muscle.

The Nucleus:

This organelle is commonly termed the brain of the cell. Within it the DNA is stored. Through transcription of the DNA the proteins contained in the nucleus make copies of the DNA in RNA. This RNA copy must now leave the nucleus so that the rest of the cell may use the information it contains to make the necessary

 chemicals which constitute our metabolism. The RNA leaves via the nuclear membrane, also called the nuclear envelope. If this membrane is not properly arranged or the channels through which the RNA must pass are the wrong way around, the RNA is stuck in the nucleus and the cell will not receive

instructions to continue producing the appropriate chemicals to ensure the survival of the cell.

Properties of Biopton Light:

The major features of the Biopton light are:

- Polarization
- Incoherence
- Polychromic
-

The specially built mirror in the Biopton devices ensures that the light waves emitted from the Biopton are all traveling parallel to one another - just like in laser light. However since the light is polychromatic, or all-colored, it contains all the wavelengths of visible light.

This means that unlike a laser the Biopton emits full spectrum light. This property prevents addition or subtraction of the energy contained in the light because practically none of the crests and troughs overlaps which also gives the light its incoherent property. Because of this the Biopton light is a very gentle form of therapy and has constant energy and power. Natural light does not have this property because it is affected by day and night rhythms and the seasons. Below is the spectrum of electromagnetic radiation contained in sunlight.

The Biopton light spectrum is between the two sky blue lines. It contains no UV light and a small portion of infra-red radiation which helps the polarized visible light penetrate deeper (up to about 2.5cm, depending on exposure time) into our body. Visible light on its own would not go as deep.

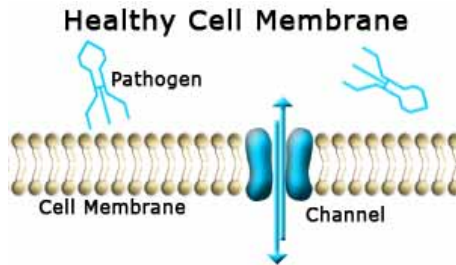


Cellular Effects:

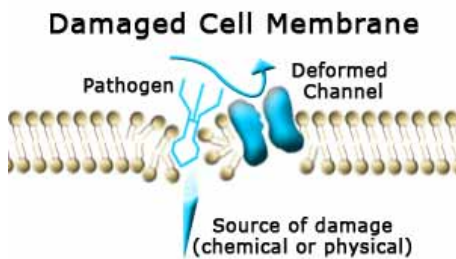
The membranes covering the entire cell and individual organelles have a very similar structure. They are composed of a lipid bi-layer. The molecules constituting the membrane have two distinct ends. The hydrophobic end has a "phobia" or fear of water, so it will be repelled by water.

The hydrophilic end is the opposite, it likes water and will be attracted to it. The result of these interactions is that a double layered membrane is formed. Over time this membrane deteriorates and the cell eventually dies. This process is normal because the old cell is replaced by a new cell. However in a diseased

state the amount of cell death or damage exceeds the regenerative capabilities of the body. The source of the damage to the membrane can be chemical (e.g. organic chemical waste), physical (e.g. asbestos) or due to the damage done by an invasive micro-organism. So when this membrane becomes disorderly the cells function is impaired and it is more easily damaged by invading organisms.



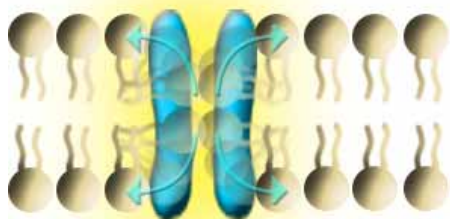
Simply explained polarized light can be thought of as charged light. The molecules constituting the membranes of the cell and its organelles are also polarized. The hydrophobic end is uncharged while the hydrophilic end is charged. So when polarized light is passed over these membrane molecules the ends arrange much like iron filings are arranged by a magnetic field.



The result is an ordered structure to the cellular membranes. The channels within the membranes are also properly arranged and thus the cell becomes optimally functional.

The ion transport mechanism used by the cell is also heavily affected when the membrane is not functioning properly. The cell selectively passes certain ions into and out of itself across its plasma membrane.

The Biopton Effect



Along with these ions the cell co-transport important life substances into itself, and unnecessary or waste substances out of itself.

The Biopton also stimulates light sensitive structures and molecules inside the cell. These in turn cause activation of larger chain reactions and secondary responses which do not have to be limited to only the cells being treated but can affect the entire body.

Photo-modification and Bio-stimulation:

These are terms used to describe the biological processes which the Biopton helps initiate or strengthen. It is possible to achieve photo-modification of blood for example, if the treatment time is long enough.

While treating one spot with the Biopton we are also treating all the blood which runs through this volume of tissue. On average there are about 1500-1600 capillaries in one cubic centimeter of subcutaneous (just beneath the skin) tissue. Thus a large number of transient blood cells are treated as well as the local tissue.

Studies from Europe have shown that normal bacteriophagocytes can phagocytes 8-10 bacteria, but after irradiation with the Biopton the can devour 50-70 bacteria. Also normally 5-10 percent of leukocytes (white blood cells) are phagocytes (cells that eat invading organisms), but after irradiation this number is increased to 50-60 percent.

After a Biopton treatment immunoglobulin levels rise in 24 hours instead of taking the usual 14 days after primary exposure. Polarized light has also shown to be useful in aiding the body to produce new collagen fibers. Capillaroscopy of treated areas clearly showed improvement in micro-circulation. These are only a few brief examples of the many effects the Biopton can achieve.

The Biopton also has very important effects on the central nervous system (CNS) through the eyes. It balances the production of inhibitory and stimulatory neurotransmitters. Through these neurotransmitters it also balances our moods (depression, stress, anger . . .) and our daily biorhythms (drowsy, hyperactive, fatigued . . .).

The Oxy Sterile Spray:

This is a very important constituent of the Biopton light therapy system, especially in the area of wound healing and cosmetics. As we have just discussed, polarized light helps to increase cellular activity through influencing its membrane and organelles. Coupled with this process clean water and oxygen can help the cell recover much faster and more efficiently.

The oxy spray consists of sterile water which has had oxygen bubbled through it to increase its oxygen content. Thus the water and oxygen are physically mixed and not chemically bound. Well hydrated and oxygenated skin cells give fresh and younger looking skin.

Polarized light in general makes any cosmetics or cream which is applied to the skin during the light treatment last much longer and penetrate deeper than it normally would. This is why it is important to apply only plant based products prior to the Biopton treatments since animal based cosmetics can have negative effects on some people if they penetrate too deep into the skin. Aside from oxygenating and moisturizing the oxy spray has a mild disinfectant effect.

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