



CHAGA MUSHROOM'S PROTECTIVE EFFECTS AGAINST RADIATION

As humans living in modern times, since the advent of cell phones and other forms of wireless communication technology, we are exposed to the highest continuous levels of radiation since the beginning of our species. Many forms of radiation can have damaging effects on the cells, such as ionizing radiation from radioactive components found in nature as well as radiation from medical treatments and nuclear energy technology, and UV radiation from the sun itself. However, the newest, most pervasive and potentially the most harmful source of radiation we are exposed to on a daily basis is non-ionizing electromagnetic radiation.

Those who downplay or deny the harmful effects of EMFs are quick to point out that manmade electromagnetic fields are non-ionizing, which they claim does not do any harm if the intensity is too low to produce a heating effect in the tissue. They say that only ionizing radiation, such as gamma rays and x-rays, which operate at a high enough frequency to instantly ionize atoms and disrupt chemical bonds in the cells of living organisms, can cause harm.

The truth is that ionizing and non-ionizing is a largely imaginary distinction. All radiation exists on a spectrum, and lower frequencies are certainly capable of breaking cell bonds and causing DNA damage over time, just not as instantly and dramatically. UV light is not considered ionizing radiation yet is widely known to be damaging to the body in excess.

There are now thousands of studies that show that the lower parts of the spectrum, including microwave radiation, can and do cause DNA damage with prolonged exposure to even low intensities, way below the threshold that causes tissue heating. Even at low frequencies and low intensities, the repetitive, pulsed structure of these manmade EMFs is extremely foreign to the body, which the body perceives and reacts to as a potential threat.

Much of the harm from electromagnetic radiation comes from the oxidative stress that is produced by the body perceiving the EMF as an enemy/invader and mounting an immune response to it. Since it's not a tangible physical invader that the body can attack and defeat (like a virus or bacteria), this immune response continues 24/7, unproductively, just to eventually exhaust the body's energy reserves. All immune responses produce countless oxidative compounds in order to kill invasion agents. However, these reactive oxygen species compounds can also damage healthy cells during their attack on the invader, so the immune defense itself can act as a source of oxidative stress.

It is important to consider that what we eat and drink can also have a considerable effect on how our body responds to EMFs. There are substances that exist in nature that produce their own internal protection against radiation. These compounds, found in various plants, mushrooms and other natural organisms, can impart these same qualities and benefits to an animal or human that consumes them!

We consider chaga mushroom to be one of the best herbal supplements to consume to increase your resilience against radiation of all types.

Chaga's adaptation to harsh environments gives it unique medicinal properties

Chaga (*Inonotus obliquus*) is a mushroom that has been used for its medicinal properties by cold climate northern peoples for at least one thousand years. Siberians and Northern Europeans consume it regularly, and it is believed

to give them extraordinary resistance to chronic illness, and considerably extended lifespans. Chaga itself grows only in extremely harsh climates, consistently exposed to intensities of cold, wind and UV radiation that are very difficult for humans to live with. The mushroom adapts to its stressful environment by producing very high levels of antioxidants and other medicinal compounds that offer it internal protection from the elements. When we consume chaga, these medicinal elements become part of our own bodies, and over time with consistent use, can build up in our bodies and increase our own resilience to many forms of stress.

Chaga mushroom grows mainly on birch trees, concentrating the natural medicinal components of the birch bark itself. The part of chaga used medicinally does not look like what we commonly think of as a mushroom, with a stem and a cap (a fruiting body), but shows up as a rough looking brown/black mycelial mass (called a sclerotium, or a conk) that grows out of the side of the tree. Its dark brown color is due to its melanin content, which is an antioxidant color pigment that's responsible for a large portion of its beneficial free radical scavenging effects.

More than 200 mycochemicals have been identified from chaga. These include water-soluble polyphenols and polysaccharides (including beta glucans), alcohol-soluble terpenes, and oil-soluble sterols. Betulin and betulinic acid are terpenes originating in the bark of the birch tree, which the chaga mushroom concentrates. These terpenes occur in the outer black crust of the chaga mushroom, and have potent antibacterial, anti-inflammatory, antiviral, and immune modulating properties. This substance is only present in wild chaga mushrooms (not lab cultivated strains) that utilize the black outer crust of the mushroom.

Chaga mushroom and electromagnetic radiation

Currently, not much research has been done specifically on how chaga can protect us from the effects of non-ionizing electromagnetic radiation in the microwave spectrum. However, we can look at the large body of research that shows the specific harmful effects of EMFs on the body, and then at the equally large body of research showing the specific beneficial and protective effects of chaga mushroom and make the correlation ourselves through rational observation.

Long term non-ionizing EMF exposure has many similar effects on the body as exposure to UV and ionizing radiation, including oxidative stress, chronic inflammation, premature aging, DNA damage, and increased incidence of various cancers. A lot of research has already been done on the protective effects of chaga mushroom against UV and ionizing radiation, and the restorative effects it can have on previous radiation damage.

It is already well documented that electromagnetic fields produce oxidative stress and damage at the DNA level. Chaga mushroom has extraordinarily high levels of antioxidants that prevent oxidative stress and damage, and repair existing damage. EMFs damage cells in ways that increase their likelihood of mutating into cancerous cells. Chaga has anti-mutagenic properties, which increase cell integrity and resistance to mutation, and increase apoptosis (cell death) of malformed cells. A side effect of the harmful action of EMFs is inducing a state of chronic inflammation. Chaga is anti-inflammatory, due to its ability to protect the body from the root causes of chronic inflammation.

Chaga is considered a powerful adaptogen, which refers to a substance that helps the body respond in a way that's appropriate to whatever is needed at that time. It can assist in ramping up immune power if there's an actual invader that needs to be eliminated, or if the immune system is overreacting or trying to fight something it shouldn't be fighting (like EMFs), it helps to calm it down. Adaptogens improve the body's innate intelligence, so that it will respond appropriately to any given situation. They can help increase energy levels and mental focus during the day when cortisol should be higher, and then help you calm down and rest in the evening as cortisol naturally lowers and melatonin increases.

Chaga is one of the highest antioxidant substances known, which can neutralize the oxidative stress of EMFs, and restore balance and harmony at the cell level.