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# Environmental Sciences and Ecology: Current Research (ESECR)

ISSN: 2833-0811

Volume 5 Issue 1, 2024

## Article Information

Received date : March 13, 2024

Published date: June 03, 2024

## \*Corresponding author

Benjamin J Scherlag, Department of Medicine, 800 Stanton L. Young Blvd, Suite 5400, Oklahoma City, OK

DOI: 10.54026/ESECR/10103

## Key Words

Hybrid-Plasma; Dark Environment; Plant Wilting

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Research Article

# Short-Term Exposure of Plants to Hybrid-Plasma: Survival in the Dark

Benjamin J Scherlag<sup>1\*</sup>, Ronald A Scherlag<sup>2</sup>, Sunny S Po<sup>1</sup>, and Tarun Dasari<sup>1</sup>

<sup>1</sup>Department of Medicine, University of Oklahoma Health Sciences Center, OK

<sup>2</sup>Unaffiliated Independent Scientific Investigator, OK

## Abstract

Previous experiments documented the applications of our newly discovered non-thermal plasma, Hybrid-Plasma (HP). HP is part gas and part water with extraordinary properties including antioxidant, anti-aging, and long-term preservation of produce. In the present report we exposed plants to HP for 48hours before placing each with its partner of the same variety but not exposed to HP in a dark cabinet without watering. Every 24 hours, for one week, the plants were observed, and photographs taken. In each case, the plant not exposed to HP wilted within 3-5 days, whereas the exposed plants were unchanged throughout the week. Our previous studies showed that all plant and animal cells contain a metabolic and electromagnetic source of energy to maintain homeostasis and physical integrity. We hypothesized that HP had enhanced the electromagnetic component and suppressed the metabolic factor. The plant not exposed to HP in the absence of light, i.e., photosynthesis, lost its energy source leading to cell death and subsequent wilting.

## Introduction

The seminal spectral analysis by Penkov et.al [1] showed that 12-19% of bulk water consists of free water molecules. Our initial studies showed that free water molecules can be separated from bulk water through diffusion and osmosis to create a non-thermal plasma [2]. The accumulated part gas/part water, Hybrid-Plasma (HP), was formed based on the inherent kinetic interactions of free water molecules. HP is characterized as a mixture of positive, negative ions, free electrons and neutral atoms in an ionic reaction that could be accumulated and stored for multiple applications [3-5]. Recent studies indicate that living cells possess both metabolic and electromagnetic forms of energy. This dual energy source is crucial for maintaining cellular integrity [6]. Furthermore, we have recently reported that unicellular organisms can survive cell death by the release of an electromagnetic replicate into the ambient environment and can return to a living state when exposed to favorable conditions [7, 8]. In the present study we found that the survival of plants exposed to short-term HP allows subsistence in the dark in the absence of photosynthesis. These findings suggest that HP alters plant cellular energetics allowing survival in stressful conditions.

## Methods

According to a previous report [6], we formed an HP environment by adding 800mL distilled water to a 4000mL acrylic cylinder. Within 48 hours 2 measurements, humidity, 95%+ and ion counts, >2,000,000/sec indicated the presence of HP as determined from previous experimental studies [2-4]. Two pairs of plants, each pair of the same variety were used for this study. One plant was placed in the HP container on a platform above the water level and the container resealed with snap covers. The other of the pair was maintained in the outside environment. After 48 hours, the plants were removed from the container and each pair put in "an enclosed cabinet in the dark.". Plants were observed and photographed every 24 hours for one week.

## Results



Figure 1: Comparison of plant wilting after 3 days in the dark. The non-HP exposed plant (left) shows severe wilting, while the HP-exposed plant (right) remained unchanged.



**Figure 2:** After 5 days in the dark, the plant on the left showed marked wilting. The plant previously exposed to HP was unaffected by the prolonged dark period.

## Discussion

For the past decade we have been learning about the many applications of our newly discovered form of non-thermal plasma, HP. In addition, to its antioxidant properties, HP demonstrated anti-aging and long-term preservation of produce [7]. Regarding anti-aging, the underlying mechanism(s) have not been elucidated. The present study provides some insights into possible mechanisms for the reported anti-aging action of HP. Hypothesis: Based on metabolism provided by photosynthesis, plants grown in the dark will not have energy to sustain their physical integrity. On the other hand, the plant exposure to HP receives its energy from another source. We have previously reported that plant and animal cells contain an electromagnetic source of energy, revealed at the life/death interface [8]. An alternate hypothesis suggests that HP has inhibitory effects on metabolism and can sustain the plant's homeostasis on the electromagnetic energy source. HP exposure appears to modify plant cellular energetics, enabling survival under stress conditions such as prolonged darkness. This suggests a potential mechanism where HP enhances electromagnetic energy utilization over metabolic processes.

## Limitations

As noted, there was a difference in the time-period that it took for a plant to wilt in the dark. This finding may reflect the difference in the plant variety and its response to the dark environment. Future studies will seek to answer whether the same plant varieties have similar wilting times in the dark. In relation to the hypotheses mentioned above, we

have developed a novel method for detecting and quantifying energy emanating from plants and animals [6]. We hypothesize that HP enhances the electromagnetic energy component while suppressing metabolic processes. Future studies should measure biofield emissions pre- and post-HP exposure to validate this hypothesis.

## Conclusions

Two houseplants were exposed to HP in an enclosed container for 48 hours. Each plant and its partner were placed in a dark cabinet and observed daily for one week. Within 3-5 days marked wilting was evident in the non-HP plant. The HP Plants were unchanged throughout. We hypothesize that HP induces significant changes in plant metabolism, enabling plants to resist the detrimental effects of light absence, which typically leads to plant death.

## Funding Source

Supported by an unrestricted grant from the Helen and Wilton Webster Foundation through the Oklahoma Research Foundation

## References

1. Penkov NV, Shvirst NE, Yashin VA (2013) Calculation of the portion of free water molecules in water solutions by means of spectral analysis. *Biophysics* 58: 739-742.
2. Scherlag BJ, Scherlag RA, Scherlag A, Po SS (2020) Molecular Filter for Free Water Molecules: Water through glass. *Letters in Health and Biological Sciences* 6: 11.
3. Scherlag BJ, Scherlag RA, Po SS (2020) Hybrid-Plasma, a Newly Formed Environment for Growing Plants Without Soil or Water. *Environ Sci Ecol: Curr Res* 3: 1046.
4. Scherlag BJ, Scherlag RA, Po SS (2022) Another Method for Producing Hybrid Plasma: The Hidden Science of the Enclosed Plant Terrarium. *Environ Sci Ecol: Curr Res* 3: 1051.
5. Scherlag RA, Brush RS, Agbaga MP, Elkholey K, Po SS (2022) Confined Water for Passive Generation and Accumulation of Non-Thermal Plasma. *Environ Sci Ecol: Curr Res* 3: 1047.
6. Scherlag BJ, Scherlag RA, Po SS, Dasari T. (2023) A New Source of Energy Present in Plants and Animals. *Advances In Engineering & Technology* 1: 1-3.
7. Scherlag BJ, Scherlag RA, Po SS, Dasari T (2023) The Ultimate Paradox: The greatest cause of dying is living. *Environ Sci Ecol: Curr Res* 4: 109277.
8. Scherlag BJ, Scherlag RA, Po SS, Dasari T (2023) The Dual Energetic State of Living Organisms: Life, death and restitution. *RAS Microbiol. Infect. Diseases* 3: 1-3.