

## Apparatus for Generating Negative Air Ions: Inactivation of Coronaviruses

Benjamin J. Scherlag<sup>1\*</sup>, Ronald A. Scherlag<sup>2</sup>, Sunny S Po<sup>3</sup>

Department of Medicine, University of Oklahoma Health Sciences Center

\*Corresponding author: Benjamin J. Scherlag, Department of Medicine, University of Oklahoma Health Sciences Center, Email: [benjamin-scherlag@ouhsc.edu](mailto:benjamin-scherlag@ouhsc.edu)

### Abstract

Feng Shui is an ancient Chinese philosophical concept meaning wind-water which incorporates the flow of environmental energy for increased health and longevity. It is known that high levels of negative ions (NI) are associated with positive health effects but systematic studies have been lacking. We hypothesize that NI levels constitute the mechanism underlying the Feng Shui phenomenon.

**Method:** We have assembled an apparatus which simulates and enhances the wind-water concept to generate high levels of negative air ions under controlled laboratory conditions. The components of the system include a fan, water mister and a negative air ion generator.

**Results:** Only the combination of these components but not each separately generated levels up to  $2000 \times 10^3 / \text{cm}^3$  negative air ions within 1-5 feet from the generating source.

**Discussion:** Naturally occurring NI levels have been recorded in thunderstorms, proximity to waterfalls, hot springs, artesian wells and coastal locations throughout the world. The emission of NI due to spray electrification (the Lenard effect) and prevailing winds (wind and water) may be critical factors that contribute to health and longevity for persons living in so-called blue zones found world-wide. Previous reports have indicated that various forms of viruses including coronaviruses can be inactivated when exposed to high levels of NI.

**Conclusions:** A laboratory apparatus simulating the Feng Shui principle can induce high levels of NI which have multiple beneficial effects particularly by inactivating coronaviruses.

**Keywords:** Negative air ions; Ion generator; Ion counter; Water spray; Coronaviruses

### Introduction

Feng Shui is a traditional practice originating from an ancient China philosophy which claims to use energy forces to harmonize individuals with their surrounding environment<sup>[1]</sup>. In the present report we hypothesize that Negative Ions (NI) are the underlying mechanism of the ancient Chinese concept of Feng Shui. NI occurs naturally in various environments at uncontrolled levels in proximity to waterfalls, hot springs, artesian wells and coastal locations throughout the world. We suggest that NI levels are responsible for health effects at healing springs and locations of high human longevity (blue zones)<sup>[2]</sup>. In the present study we present evidence that various forms of coronaviruses, such as Covid 19, can be inactivated when exposed to NI.

### Methods

To test our hypothesis, we have developed an apparatus simulating and enhancing the wind-water effect. The components of the NI system include a fan, an ion generator and a small water mister [Figure1].

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**Figure 1:** The composite Feng Shui (Wind-Water) apparatus consists of three components. Left to right, a small fan, commercial ion generator and a mister that sprays water into the local atmosphere.

To measure the levels of negative ions emitted at various distances from the composite system we used an ion counter (Model AIC2 Alpha Lab Inc, USA) which measured negative and positive ion levels up to  $2000 \times 10^3$  ions/cm<sup>3</sup>.

**Statistical Analysis:** Data are expressed as mean + standard deviation. We compared the NI concentrations induced by each of the components of the Wind-Water technology with the NI emitted by the system as a whole. A similar statistical comparison was made between the NI measured in the 1300 square foot room with and without the composite technology

**Operating:** A student T-Test (2-tailed, unpaired) was used for all these comparisons. P-values <0.05 were considered to be significant.

**Table 1:** Negative Ion Levels Comparing Components vs Composite System

(A) Ion Generator Only							
Distance	Test 1	Test 2	Test 3	Test 4	Test 5	Average	SD
1 ft	9.37	15.07	5.13	10.66	4.19	8.88	4.4
5 ft	1.64	1.98	1.42	1.69	1.39	1.62	0.2
(B) Fan Only							
Distance	Test 1	Test 2	Test 3	Test 4	Test 5	Average	SD
1 ft	2.54	3.39	4.33	3.8	3.89	3.59	0.7
5 ft	0.43	5.9	3.74	1.04	0.83	2.38	2.4
(C) Mist Only							
Distance	Test 1	Test 2	Test 3	Test 4	Test 5	Average	SD
1 ft	89.37	51.71	119.82	119.41	83.53	92.76	28.4
5 ft	1.71	2.72	6.26	3.89	4.48	3.812	1.7
(D) All Components (Feng Shui System)							
Distance	Test 1	Test 2	Test 3	Test 4	Test 5	Average	SD
1 ft	1990.85	2000	1240	1647	825	1540.57	506.8
5 ft	199.64	152.7	198.32	238.5	231.73	204.178	34
(E) All Components (Feng Shui System)							
	Test 1	Test 2	Test 3	Test 4	Test 5	Average	SD
1300 sq ft	111.6	115.75	121.62	136.12	111.43	119.30	10.3
Control	2.09	2.27	0.03	0.05	2.48	1.16	1.3

Table 1 shows the data for the NI levels when comparing the measurements emitted by the components, A, B, C, compared to the composite system (D, all n=5 measurements).

## Results

The system, i.e., all components operating together, emitted a significantly greater average concentration of NI that were emitted by the components functioning alone, measured both at 1 or 5 feet from the source,  $p < 0.05$ .

In addition, the levels of NI measured in the 1300 square foot room were significantly greater than that measured before the component system was deployed as a control,  $p < 0.05$ . Table 1 E.

## Discussion

**Major findings:** We have developed an apparatus consisting of 3 components for delivering substantial levels of NI into the immediate as well as the ambient environment. Notably, each of the components does not produce NI levels equal to the concentration of NI when the composite system was in operation.

An important finding was that the water mister which provides a fine spray showed the highest levels of the 3 components. This finding conforms to the concept of spray electrification which was developed by Lenard in 1892<sup>[3]</sup> who found that air near the base of a waterfall was negatively charged. Recent studies by Kolarz et al.<sup>[4]</sup> in the same environment both positive and negative air ions were present with at least ten times the NI than positive ions. In regard to our water spray mister, Beattie<sup>[5]</sup> concluded that negative charges at the air water interface caused a “rupture” of the neutral water molecule resulting in negative ions discharged from the surface. We have further discovered that the addition of the fan and ion generator significantly increased the concentration of NI into the local and ambient environment.

## Effects of NI

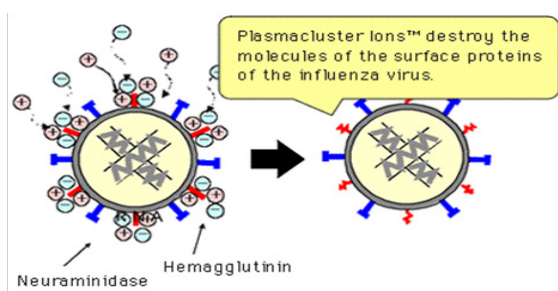
Jiang et al<sup>[6]</sup> provided a comprehensive review of the production of NI induced by UV (ultra-violet) lighting to lightning in thunderstorms. High electric fields also cause NI productions which have shown biological effects such as enhancing plant growth and providing multiple health benefits for humans. It is interesting to note that high NI levels may be a significant factor contributing to the enhanced health and longevity, well documented for inhabitants of so-called blue zones<sup>[7]</sup>. All of these regions share the presences of hot springs which release water spray. Spray electrification, as described above, can readily serve as the source of NI whose concentrations are multiplied by prevailing winds.

## Prevention of Transmission of Viruses by NI

Mitchell and King<sup>[8]</sup> performed experiments to determine the effect of negative air ions on airborne transmission of Newcastle disease virus in chickens. The use of negative air ion generators significantly reduced transmission from donor chickens with viral infections to susceptible chickens that were not inoculated with the virus.

## Inactivation of Coronaviruses

Susuki and Kobayashi<sup>[9]</sup> used a specially designed ion generator that produced both positive as negative ions as a result of a plasma discharge (plasma cluster ions) determined by spectroscopy. These ions surround airborne micro-particles like fungal spores or viruses creating highly reactive OH<sup>-</sup> negative ions that inactivate the various particles. Electron microscope observations indicated that plasmacluster ion treatment is associated with decomposed virus fragments. OH<sup>-</sup> negative ions cluster surround the spike protein consisting of positively charged amino acid molecules thereby preventing the spike from attaching to a potential host cell thereby triggering infection (Figure 2, from reference 9).



## Limitations

It should be noted that at present the evidence purported to show the inactivation of coronaviruses is preliminary and suggestive at best. The development of systems for emitting NI, i.e. plasma-cluster generator, or the Feng Shui technology described in the present study require extensive further testing for establishing the safety and efficacy of this approach for coronavirus control.

## Conclusions

We have developed an apparatus consisting of 3 components for delivering substantial levels of NI into the immediate area as well as the ambient environment. These same components, fan and mister represent wind and water, generating NI produced in

nature. This occurs in falling rain, breaking waves and thunderstorms. Similarly, all these instances are associated with wind and water. Based on previous reports, this NI technology may provide a safe and effective method for treating and possible prevention of diseases caused by coronaviruses.

**Conflict of interest:** None declared

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