



Effects of the Consciousness Energy Healing Treatment on the Physicochemical and Thermal Properties of Zinc Chloride

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Abstract

Zinc chloride (ZnCl_2) is used as a common source of zinc supplement in the pharmaceutical and nutraceutical formulations. In this experiment, the impact of the Trivedi Effect[®]- Consciousness Energy Healing Treatment on the physicochemical, thermal, and behavioral properties of ZnCl_2 was evaluated using sophisticated analytical techniques. The test sample ZnCl_2 was divided into two parts. One part of ZnCl_2 was considered as a control sample (no Biofield Treatment was provided), while second part received the Trivedi Effect[®]-Consciousness Energy Healing Treatment remotely by a famous Biofield Energy Healer, Alice Branton and termed as treated ZnCl_2 . The powder XRD crystallite sizes and peak intensities of the treated ZnCl_2 were significantly altered ranging from -16.67% to 99.97% and -88.51% to 202.23%, respectively; however, the average crystallite size was significantly increased by 14.14% compared with the control sample. The particles size values of the treated ZnCl_2 at d_{10} , d_{50} , and d_{90} and D (4,3) were significantly increased by 886.20%, 36.70%, 28.90%, and 92.71%, respectively compared to the control sample. Hence, the surface area of the treated ZnCl_2 was significantly decreased by 81.16% compared with the control ZnCl_2 . The latent heat of fusion of the treated ZnCl_2 was significantly increased by 26.48% compared with the control sample. However, the latent heat of decomposition of the treated ZnCl_2 was significantly decreased by 85.20% compared with the control sample. The study results anticipated that the Trivedi Effect[®]-Consciousness Energy Healing Treatment might produce a new polymorphic form of ZnCl_2 with larger crystallite and particle size and reduced surface area, which would improve the flowability, shape, and appearance compared with the control sample. The Biofield Energy Treated ZnCl_2 would be very useful to design more efficacious nutraceutical or pharmaceutical formulations against cancer, inflammatory diseases, stress, immunological disorders, aging, Parakeratosis, dysosmia, anorexia, hypogeusia, hypogonadism, Wilson's disease, etc.

Keywords: Zinc chloride; Consciousness energy healing treatment; The Trivedi Effect[®], PXRD, Particle size; Surface area; DSC

Introduction

Zinc is an essential trace element which regulates a broad spectrum of physiological functions in the human body including prenatal and postnatal development [1]. Zinc is plenty available in animal meat, fish, shellfish, fowl, eggs, milk, wheat (germ and bran) and various seeds like sesame, poppy, alfalfa, mustard, celery, beans, nuts, almonds, whole grains, pumpkin seeds, sunflower seeds, and blackcurrant [2,3]. It is found in more than 100 enzymes (i.e., carbonic anhydrase, carboxypeptidase, etc.) and part of the protein (i.e., metallothioneins), serves as structural ions in transcription factors,

nucleic acid, and protein metabolism, coordinate amino acid chains, etc. [4-7]. Pharmacologically it acts as a fertility enhancing, retino-protective, immunomodulatory, antioxidant, and putative antiviral in the body [6,8]. It has been reported with increased leukocyte count and phagocytic index in combination with *Glycyrrhiza glabra* [9]. Zinc is also used to prevent the progress of several deficiency disorders include Parakeratosis, hypogeusia, dysosmia, anorexia, hypogonadism, growth retardation, Wilson's disease, etc. [10-13]. Deficiency of zinc is generally due to insufficient dietary intake,

which can be associated with malabsorption, chronic liver and renal disease, acrodermatitis enteropathica, sickle cell disease, malignancy, diabetes, and other chronic illnesses [14].

Zinc chloride ($ZnCl_2$) is used as a common source for zinc in the pharmaceutical, nutraceutical, and cosmetic industry for the preparation of drug and diagnostic agent, mouth-wash, dentin desensitizer, deodorant, disinfectant, protein precipitator, and insulin preparation due to its powerful astringent and mild antiseptic properties [15-18]. The literature reported that $ZnCl_2$ could also be used in the treatment of skin cancer as a destructive agent and palliative treatment of canine and malignant skin wounds [19,20]. Therefore, $ZnCl_2$ was considered one of the components in the nutraceuticals/pharmaceuticals supplement for the prevention and treatment of various human disorders. $ZnCl_2$ also used in other industry dealing with chemicals, metallurgy, textile, and paper manufacture [17]. $ZnCl_2$ is irritant to skin, caustic to the gastrointestinal tract, occasionally leading to hematemesis, lethal to the human at the dose of 3-5 milligram, and extremely detrimental to the pulmonary and lungs on exposure to $ZnCl_2$ smoke [17,21].

Physicochemical properties of a nutraceutical and pharmaceutical compounds play a very important role in its therapeutic efficacy [22]. The Trivedi Effect[®]-Consciousness Energy Healing Treatment significantly altered the physicochemical and thermal properties of many pharmaceutical/nutraceutical compounds [23-25], along with improved the bioavailability of poorly bioavailable compounds (i.e., resveratrol, berberine, and 25-hydroxyvitamin D₃ in male *Sprague-Dawley* rats) [15-17]. The Trivedi Effect[®] (the Biofield Energy Treatment) is a natural and only scientifically proven phenomenon in which a skilled individual can harness this inherently intelligent energy from the "Universe" and transmit it anywhere on the planet via the possible mediation of neutrinos [27-29]. The "Biofield" is infinite, paradimensional, and dynamic electromagnetic field is present surrounding the human body. The Biofield Energy can easily flow between the human and environment that leads to the uninterrupted movement or matter of energy [30-32]. The Biofield based Energy Healing Therapies also used against various human disease conditions and accepted worldwide. It has been recognized as a Complementary and Alternative Medicine (CAM) health care approach by National Center of Complementary and Integrative Health (NCCIH) along with other therapies, medicines and practices such as Ayurvedic medicine, traditional Chinese herbs and medicines, yoga, Reiki, hypnotherapy, aromatherapy, homeopathy, Qi Gong, Tai Chi, chiropractic/osteopathic manipulation, meditation, acupuncture, acupressure, naturopathy, healing touch, cranial sacral therapy, movement therapy, etc. [32-34]. The Biofield Energy Treatment has been reported in numerous peer-reviewed scientific journals with significant outcomes in medical research [35], microbiology [36,37], biotechnology [38,39], metals, ceramics [40,41], organic compounds [42], and agriculture [43]. The physicochemical properties of pharmaceutical/nutraceutical compounds have

a vital role in bioavailability as well as the stability of the drug during manufacturing, storage, and packaging [22,44]. Thus, the study was designed to evaluate the impact of the Trivedi Effect[®]-Consciousness Energy Healing Treatment on the physicochemical and thermal properties $ZnCl_2$ using powder X-ray diffraction (PXRD), particle size distribution analysis (PSD), and differential scanning calorimetry (DSC) analytical techniques.

Materials and Methods

Chemicals and reagents

The $ZnCl_2$ powder was procured from Tokyo Chemical Industry Co., Ltd. (TCI), Japan and other chemicals used in the course of the experiment were purchased in India.

The Trivedi Effect[®]-Consciousness Energy Healing Treatment

The test sample $ZnCl_2$ was equally divided into two parts. One part of the test sample did not receive Biofield Energy Treatment and was termed as the untreated or control $ZnCl_2$ sample. But, the control $ZnCl_2$ sample was subjected to a "sham" healer, under the same laboratory conditions; whereas, the "sham" healer totally ignorant about the Biofield Energy and its treatment procedure. The 2nd part of the test sample was exposed to the Trivedi Effect[®] - Consciousness Energy Healing Treatment (Biofield Energy Treatment) by a renowned Biofield Energy Healer, Alice Branton, USA, remotely under standard laboratory conditions for 3 minutes and known as Biofield Energy Treated $ZnCl_2$. After the treatment, both the samples were kept in similar sealed conditions and further characterized thoroughly using modern analytical techniques.

Characterization

The powder XRD analysis of $ZnCl_2$ powder sample was performed with the help of Rigaku Mini Flex-II Desktop X-ray diffractometer (Japan) [45,46]. The average size of crystallites of both the samples was calculated from powder XRD data using the Scherrer's formula (1)

$$G = k\lambda/\beta\cos\theta \quad (1)$$

Where G is the crystallite size in nm, λ is the radiation wavelength, k is the equipment constant, β is the full-width at half maximum, and θ is the Bragg angle [47].

The PSA was performed using Malvern Mastersizer 2000, from the UK using the wet method. Similarly, the DSC analysis of $ZnCl_2$ samples was performed with the help of DSC Q200, TA instruments [45,46].

The % change in peak intensity, crystallite size, particle size, specific surface area, melting point, and latent heat of the Biofield Energy Treated $ZnCl_2$ sample was calculated compared with the control sample using the following equation 2:

$$\%Change = \frac{[Treated - Control]}{Control} \times 100 \quad (2)$$

Results and Discussion

Powder X-ray diffraction (PXRD) analysis

The PXRD diffractograms of both the control and the treated ZnCl₂ samples displayed very sharp and intense peaks in their respective diffractogram indicated that both the samples were crystalline nature (Figure 1). PXRD data such as Bragg angle (2θ), relative intensity (%), and crystallite size (G) for the control and Biofield Treated ZnCl₂ are presented in Table 1. The crystallite sizes of the Biofield Treated ZnCl₂ were significantly altered ranging from -16.67% to 99.97% compared with the control sample. However,

the average crystallite size of the treated ZnCl₂ was significantly increased by 14.14% (Table 1, entry 37) compared to the control sample. The PXRD diffractograms of both the control and the treated ZnCl₂ displayed greater intensity at Bragg's angle (2θ) near 25.6° (Table 1, entry 9). Besides this, the relative peak intensities of the PXRD peaks in the treated ZnCl₂ were significantly altered compared with the control sample (Table 1). Hence, the relative peak intensities of the Biofield Treated ZnCl₂ were significantly altered ranging from -88.51% to 202.23% compared to the control sample.

Table 1: Powder XRD data of the control and Biofield Energy Treated ZnCl₂.

Entry No.	Bragg angle (°2θ)	Relative Intensity (%)			Crystallite size (G, nm)		
		Control	Treated	%Change	Control	Treated	%Change
1	3.9	11.79	10.94	-7.21	19.12	34.43	80.06
2	13.6	4.54	9.2	102.64	38.51	49.52	28.61
3	14.7	3.46	8.84	155.49	31.54	49.59	57.21
4	15.7	31.02	47.7	53.77	38.6	38.6	0
5	16.7	46.14	40.38	-12.48	31.62	43.49	37.54
6	17.9	3.74	7.96	112.83	38.71	38.71	0.01
7	23.6	1.32	1.72	30.3	27.04	25.11	-7.14
8	24.9	3.4	4.83	42.06	35.25	50.36	42.9
9	25.6	100	100	0	44.12	58.77	33.2
10	29.5	65.94	73.98	12.19	58.35	59.27	1.57
11	34.6	1.42	1.83	28.87	18.47	30.04	62.63
12	35.1	59.49	57.84	-2.77	59.19	59.19	0
13	35.2	29.03	28.52	-1.76	98.68	98.68	0
14	38.4	26.51	50.87	91.89	49.8	59.76	20
15	38.5	11.98	24.72	106.34	74.73	99.64	33.33
16	45.1	1.37	1.77	29.2	19.1	38.19	99.97
17	48.8	47.31	49.24	4.08	51.66	62	20.01
18	48.9	25.01	26.72	6.84	62.02	62.03	0.01
19	49.3	22.03	29.05	31.87	44.37	62.12	40.01
20	49.5	10.57	16.2	53.26	62.15	51.8	-16.66
21	52.4	16.13	13.01	-19.34	62.93	62.92	0
22	52.6	7.68	7.12	-7.29	62.97	62.96	0
23	56.3	13.05	1.5	-88.51	45.74	64.05	40.01
24	56.5	7.14	15.37	115.27	53.41	64.09	20.01
25	57.5	13.72	6.15	-55.17	64.41	64.42	0.01
26	57.7	6.57	3.21	-51.14	53.72	53.73	0.01
27	58.5	23.95	14.82	-38.12	64.71	53.92	-16.67
28	58.6	11.5	8.3	-27.83	64.76	53.96	-16.67
29	61.9	9.26	12.48	34.77	47.03	65.85	40
30	62.1	4.76	6.44	35.29	54.92	65.91	20
31	63.3	2.75	4.62	68	55.27	66.33	20
32	66.3	4.28	5.69	32.94	56.23	67.48	20.01
33	66.5	2.21	2.82	27.6	42.22	67.56	60.02
34	72.3	12.07	7.52	-37.7	58.29	49.97	-14.26
35	72.5	6.23	3.63	-41.73	50.03	50.04	0.03
36	73.9	3.14	9.49	202.23	50.51	58.94	16.68
37		Average crystallite size			49.73	56.76	14.14

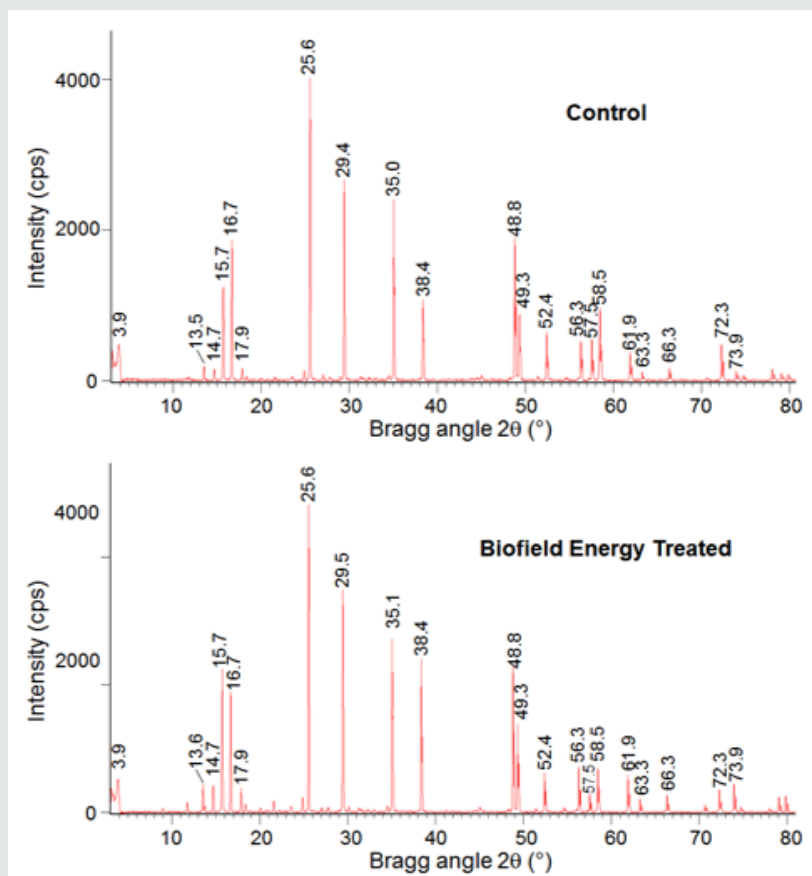


Figure 1: PXRD diffractograms of the control and Biofield Energy Treated $ZnCl_2$.

From the results, it can be assumed that the crystal size, as well as the relative peak intensities, were significantly altered due to the Trivedi Effect[®]-Consciousness Energy Healing Treatment. As per the literature, any changes in the XRD patterns, such as crystallite size, and relative intensities, indicated the change of the crystal morphology as well as the proof of polymorphic transition [48-50]. The crystal pattern, size, and even polymorphic form play an important role in the drug solubility, dissolution, and bioavailability of orally administered pharmaceutical and/or nutraceutical formulations [22]. Thus, the Biofield Energy Healing Treated $ZnCl_2$ could be very useful for designing a better and effective nutraceutical/pharmaceutical formulations.

Table 2: Particle size data $\{d_{10}, d_{50}, d_{90}$ and $D(4,3)\}$ and surface area of the control and Biofield Treated $ZnCl_2$.

Parameter	d_{10} (μm)	d_{50} (μm)	d_{90} (μm)	$D(4,3)$ (μm)	Surface area (m^2/g)
Control	3.84	85.81	208.13	89.76	583.9
Biofield Energy Treated	37.87	117.3	268.28	172.98	110
Percent change (%)	886.2	36.7	28.9	92.71	-81.16

From the results, it can be assumed that the introduction of the external force like Biofield Energy Treatment (the Trivedi Effect[®]) transformed of the small $ZnCl_2$ particles into larger particles. Increase in the particle size enhances the flowability, improved product shape and appearance [51,52]. Therefore, Biofield Energy Healing Treated $ZnCl_2$ would have improved the flowability, shape, and appearance.

Particle size distribution (PSD) analysis

The particle size values (d_{10} , d_{50} , and d_{90} , $D(4,3)$) and the average surface area of the control and the treated $ZnCl_2$ were characterized and are presented in Table 2. The size of the particles in the treated $ZnCl_2$ sample at d_{10} , d_{50} , and d_{90} and $D(4,3)$ were significantly increased by 886.20%, 36.70%, 28.90%, and 92.71%, respectively compared to the control sample. Hence, the surface area of the Biofield Energy Treated $ZnCl_2$ ($110.00m^2/g$) was significantly decreased by 81.16% compared with the control sample ($583.90m^2/g$).

Differential scanning calorimetry (DSC) analysis

The DSC thermograms of the control and Biofield Energy Treated $ZnCl_2$ are presented in Figure 2. The thermal analysis data such as melting and decomposition temperature, and enthalpy of fusion and decomposition of the control and Biofield Energy Treated $ZnCl_2$ are presented in Table 3. The melting temperature

of the Biofield Energy Treated ZnCl_2 (310.11 °C) was slightly decreased by 0.53% compared with the control sample (311.77 °C). Similarly, the decomposition temperature of the Biofield Energy Treated ZnCl_2 (382.96 °C) was decreased by 1.48% compared with the control sample (388.73 °C). The latent heat of fusion or enthalpy of fusion (ΔH_{fusion}) of the control and Biofield Energy Treated ZnCl_2 was 38.17 J/g and 48.28 J/g, respectively. The ΔH_{fusion} of the Biofield Energy Treated ZnCl_2 was significantly increased

by 26.48% compared with the control sample. But the enthalpy of decomposition ($\Delta H_{\text{decomposition}}$) of the control and Biofield Energy Treated ZnCl_2 were 208.60 J/g and 30.87 J/g, respectively. The $\Delta H_{\text{decomposition}}$ of the Biofield Energy Treated ZnCl_2 was significantly decreased by 85.20% compared with the control sample. Overall, the data indicated that Biofield Energy Treated ZnCl_2 needs less energy to undergo the process of melting after Biofield Energy Treatment.

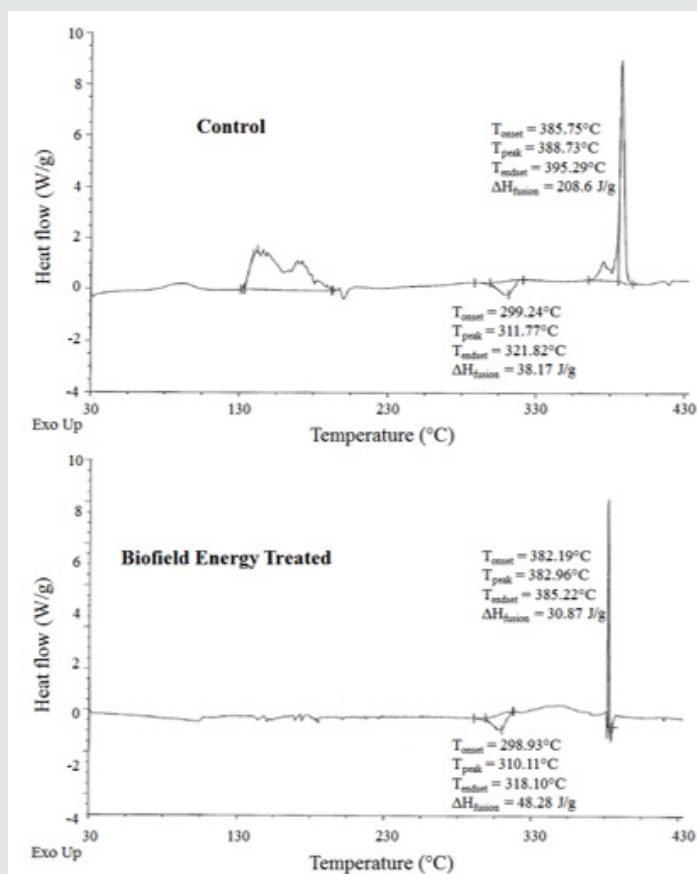


Figure 2: DSC thermograms of the control and Biofield Energy Treated ZnCl_2 .

Table 3: The latent heat of fusion/decomposition and melting/decomposition temperature values of the control and Biofield Energy Treated ZnCl_2 .

Peak	Sample	T (°C)	ΔH (J/g)
Endothermic peak	Control	311.77	38.17
	Biofield Energy Treated	310.11	48.28
	% Change	-0.53	26.48
Exothermic peak	Control	388.73	208.60
	Biofield Energy Treated	382.96	30.87
	% Change	-1.48	-85.20

T: melting/decomposition temperature, ΔH : Enthalpy of fusion/decomposition.

Conclusion

The experimental data revealed that the Trivedi Effect®-Consciousness Energy Healing Treatment had shown a considerable impact on the crystal, particle, thermal, and behavioral properties of ZnCl_2 . The crystallite sizes of the Biofield Energy Treated ZnCl_2 were

significantly altered ranging from -16.67% to 99.97% compared with the control ZnCl_2 . Likewise, the relative peak intensities of the Biofield Energy Treated ZnCl_2 were significantly altered ranging from -88.51% to 202.23% compared to the control sample. However, the average crystallite size of the Biofield Energy Treated ZnCl_2 was

significantly increased by 14.14% compared to the control $ZnCl_2$. The particle size values of the Biofield Energy Treated $ZnCl_2$ at d_{10} , d_{50} , and d_{90} and $D(4, 3)$ were significantly increased by 886.20%, 36.70%, 28.90%, and 92.71%, respectively compared to the control sample. Hence, the surface area of the Biofield Energy Treated $ZnCl_2$ was significantly decreased by 81.16% compared with the control sample. The ΔH_{fusion} of the treated $ZnCl_2$ was significantly increased by 26.48% compared with the control sample. However, the $\Delta H_{\text{decomposition}}$ of the Biofield Energy Treated $ZnCl_2$ was significantly decreased by 85.20% compared with the control sample. The current study anticipated that the Trivedi Effect®-Consciousness Energy Healing Treatment might produce a new polymorphic form of $ZnCl_2$ with larger crystallite size and particle size would improve the flowability, shape, and appearance compared with the control sample. The Biofield Energy Treated $ZnCl_2$ would be very useful to design more efficacious nutraceutical or pharmaceutical formulations against cancer, inflammatory diseases, immunological disorders, stress, aging, Parakeratosis, hypogeusia, dysosmia, anorexia, hypogonadism, growth retardation, Wilson's disease, etc.

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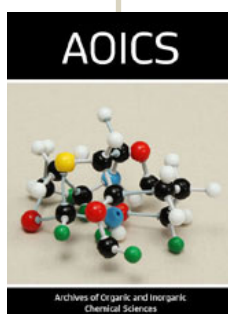
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