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Consciousness Energy Healing Treatment on *Withania somnifera* Root Extract and Its Effects on the Physical, Spectroscopic, Thermal and Behavioral Properties

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Abstract: *Withania somnifera* (Ashwagandha) is useful as an herbal medicine and nutraceuticals for the prevention and treatment of anxiety, insomnia, tuberculosis, tumors, menstrual problems, etc. The objective of the current study was to evaluate the influence of The Trivedi Effect[®] - Consciousness Energy Healing Treatment on the physical, spectroscopic, thermal and behavioral properties of ashwagandha root extract using PXRD, PSD, FT-IR, UV-vis spectroscopy, TGA, and DSC analysis. Ashwagandha root extract was divided into two parts – one part was control without any Biofield Energy Treatment and another part was treated with the Consciousness Energy Healing Treatment remotely by twenty renowned Biofield Energy Healers and defined as Biofield Energy Treated sample. The PXRD analysis demonstrated that both the control and treated samples were amorphous in nature. The particle size values at d₁₀, d₅₀, and d₉₀ of the treated sample were decreased significantly by 18.88%, 8.60%, and 4.00%, respectively compared with the control sample. Similarly, the surface area of the treated sample was significantly increased by 102.63% compared to the control sample. FT-IR results suggest that there was a small impact of Biofield Energy Treatment on ashwagandha root extract at the atomic level to reduce the force constant of O-H (str.) bond. UV-vis analysis revealed that the wavelength for the maximum absorbance of the control and treated samples were at 207.4 and 207.7 nm, respectively. TGA revealed the three steps of thermal degradation steps and the total weight loss was decreased by 0.13% in the treated sample compared with the control sample. Consequently, the maximum thermal degradation temperature at 272.73°C and 393.14°C for two broad peaks in treated sample was increased by 1.13% and 0.85%, respectively compared to the control the sample (269.68°C and 389.83°C). DSC analysis indicated that the evaporation temperature and latent heat of vaporization was increased by 1.35% and 5.52%, respectively in the treated sample compared with the control sample. The current findings suggested that The Trivedi Effect[®] - Energy of Consciousness Healing Treatment might have the astounding capacity to enhance the solubility, absorption, dissolution, bioavailability and thermal stability of ashwagandha root extract in various form of pharmaceutical and nutraceutical formulation by modifying its particle size and surface area. Thus, the treated ashwagandha root extract might provide better therapeutic response against inflammatory

diseases, immunological disorders, arthritis, sexual disorders, stress, cancer, diabetes, ageing, and other chronic infections.

Keywords: *Withania Somnifera*, Biofield Energy Healing Treatment, Consciousness Energy Healing, The Trivedi Effect[®], PXRD, Particle Size, TGA, DSC

1. Introduction

Withania somnifera commonly known as ashwagandha, is often touted as the Indian version of ginseng and traditionally known as ‘Ashwagandha’ or winter cherry [1]. Ashwagandha is widely used in the most of the Indian herbal medicine and nutraceuticals for the treatment of various diseases including sexual and nervous disorders, diabetes, infectious diseases, cancer, ulcer, stress, immunological disorders, arthritis, etc. From the ancient time, it is used as a tonic to arrest the ageing process, rejuvenate the body and boost the defense against infectious disorders and also promote the longevity [2-11]. As ashwagandha root extract contains a wide array of phytochemicals and it is used as a dietary supplement for the better quality of life [3]. The major active phytoconstituents of ashwagandha root extract are highly oxygenated withanolides. Withanolides have steroidal nucleus with side chain, having a six membered lactone ring. The oxidation at various sites of skeleton is responsible for the structural deviations in different classes of withanolides [11-14].

Literatures reported that withanolides such as withaferin A, withanolide D, withanolide E, etc. possess various pharmacological activities including antioxidant, anticancer, immunomodulating, antibacterial, neuroprotective, antiepileptic, adaptogenic, spermatogenic, anti-anxiety, antidepressant, hepatoprotective, antiarthritic, anti-inflammatory, antimicrobial, antiulcer, hypoglycaemic, hypolipidemic, aphrodisiac, radiosensitizing, etc. [11, 14-19]. Therefore, a new proprietary herbomineral formulation was formulated that consisted of herbal product like ashwagandha root extract along with minerals such as magnesium, zinc, and selenium. This herbomineral formulation is designed as nutraceutical supplement and can be used for the prevention and treatment of various human disorders.

From the ancient-time, the living force preserved by every living organisms that contributes the ‘life’ is defined as prana by the Hindus, *qi* or *chi* by the Chinese, and *ki* by the Japanese. This is believed to co-relate with the soul, spirit, and mind. This hypothetical vital force is considered now as the Bioenergetics Field. The Biofield Energy Field is a dynamic electromagnetic field existing surround of the human body. The Biofield Energy is infinite and paradigmatic. It can freely flow between the human and environment that leads to the continuous movement or matter of energy [20, 21]. Thus, the human has the ability to harness energy from the earth, the “universal energy field” and transmit it to any living or nonliving object (s) around the globe. The objects always receive the energy and respond in a useful way. This process is known as Biofield Energy Healing Treatment [22, 23]. Biofield (Putative Energy Fields) based Energy Therapies are used worldwide to promote

health and healing [24]. The National Center of Complementary and Integrative Health (NCCIH) has been recognized and accepted Biofield Energy Healing as a Complementary and Alternative Medicine (CAM) health care approach in addition to other therapies, medicines and practices such as natural products, deep breathing, yoga, meditation, Qi Gong, Tai Chi, chiropractic/osteopathic manipulation, massage, special diets, homeopathy, progressive relaxation, guided imagery, acupressure, acupuncture, hypnotherapy, relaxation techniques, pilates, healing touch, movement therapy, rolfing structural integration, mindfulness, Ayurvedic medicine, traditional Chinese herbs and medicines, naturopathy, essential oils, aromatherapy, cranial sacral therapy, Reiki, and applied prayer (as is common in all religions, like Hinduism, Buddhism, Christianity, and Judaism) [25]. The Biofield Energy Treatment (The Trivedi Effect[®]) has been extensively studied with significant outcomes in many scientific fields such as cancer research [26], biotechnology [27, 28], genetics [29, 30], altered antimicrobial sensitivity of pathogenic microbes in microbiology [31-33], altered structure of the atom in relation to the various metals, polymers, ceramics, and chemicals materials science [34-36], altered physical and chemical properties of organic compounds [37-39], pharmaceuticals [40, 41], nutraceuticals [42, 43], and improved overall growth and yield of plants in agricultural science [44, 45]. Herbal extracts and its formulations despite of their outstanding *in vitro* results exhibited poor or low *in vivo* activity, because of their low lipid solubility or improper molecular size, causing in deprived absorption and thus poor bioavailability. According to the recent study on the bioavailability of major withanolides of *Withania somnifera*, Devkar *et al.* demonstrated that the nonpolar and low molecular weight withanolides are highly permeable, whereas the high glycosylated and polar withanolides displayed low permeability in their *in vitro* absorption model system [46]. As ashwagandha root extract has the outstanding nutrition and medicinal values, researchers are still working on to find out an optimal dosage range for reproducing the desired effects in human as well as to determine the safe, effective and non-toxic dosage form [47]. The physicochemical properties such as surface area, particle size, crystalline structure, crystallite size, etc. and thermal properties of a drug play a vital role in bioavailability as well as stability of the drug during processing, formulation, packaging, and storage [48, 49]. Biofield Energy Treatment (The Trivedi Effect[®]) has been reported to change the particle size, specific surface area, crystalline, chemical and thermal behavior of an atom/ion through possible mediation of neutrinos [50]. By considering all these aspect, the objective of the current study was to determine whether The Trivedi

Effect[®] - Consciousness Energy Healing Treatment (Biofield Energy Healing) can change the physical, structural, and thermal properties of ashwagandha root extract in such a way that might be assist in the improvement of the solubility and absorption of ashwagandha root extract and also help in designing of any suitable pharmaceutical formulation. The physical, spectroscopic, and thermal properties of both control and the Biofield Energy Treated ashwagandha root extracts were evaluated using various analytical techniques include Fourier transform infrared (FT-IR) spectrometry, ultraviolet-visible (UV-vis) spectroscopy, powder X-ray diffraction (PXRD), particle size distribution analysis (PSD), thermogravimetric analysis (TGA), and differential scanning calorimetry (DSC).

2. Materials and Methods

2.1. Chemicals and Reagents

Withania somnifera (Ashwagandha) root hydroalcoholic extract was purchased from Sanat Product Ltd., India. All other chemicals used in the experiment were of analytical grade available in India.

2.2. Consciousness Energy Healing Treatment Strategies

Withania somnifera root extract powder was one of the components of the new proprietary herbomineral formulation, developed by our research team, and it was used *per se* as the test compound for the current study. The test compound was divided into two parts, one part of the test compound was treated with The Trivedi Effect[®] - Consciousness Energy Healing Treatment (Biofield Energy Healing) by renowned Biofield Energy Healers and defined as Biofield Energy Treated sample, while the second part of the test compound did not receive any sort of such treatment and defined as untreated or control ashwagandha root extract sample. The Trivedi Effect[®] treatment was provided by the group of twenty renowned Biofield Energy Healers who participated in this study and performed the Biofield Energy Treatment (The Trivedi Effect[®]) remotely. Thirteen Biofield Energy Healers were remotely located in the U.S.A., five were located in Canada, and two were located in Australia, while the test compound was located in the research laboratory of GVK Biosciences Pvt. Ltd., Hyderabad, India. The Trivedi Effect[®] - Consciousness Energy Healing Treatment was provided for 5 minutes through Healer's Unique Energy Transmission process remotely to the test compound under the laboratory conditions. None of the Biofield Energy Healers in this study visited the laboratory in person, nor had any contact with the compounds. Similarly, the control sample was subjected to "sham" healers for 5 minutes, under the same laboratory conditions. The sham healer did not have any knowledge about Biofield Energy Treatment. After that, the treated and untreated samples were kept in similar sealed conditions and characterized thoroughly by PXRD, PSD, FT-IR, UV-visible spectroscopy, TGA, and DSC analysis.

2.3. Characterization

2.3.1. Powder X-Ray Diffraction (PXRD) Analysis

The PXRD analysis was accomplished on PANalytical X'Pert Pro powder X-ray diffractometer system. The X-ray of wavelength 1.54056 Å was used. The data was collected in the form of a chart of the Bragg angle (2θ) vs. intensity, and a detailed table containing information on peak intensity counts, d value (Å), relative intensity (%), full width half maximum (FWHM) (θ°). From the XRD results, the crystallite size (G) was calculated using X'Pert data collector and X'Pert high score plus processing software. A total of ~500 mg of the control and treated samples individually were used for the analysis and prepared by back loading technique using the sample preparation kit. The sample was spread on the holder ring in sufficient quantity to fill the ring cavity. It was then pressed down using powder press block and scrap the powder that was in surplus using a glass slide to get densely packed specimen. Consequently, the bottom plate was placed onto the holder ring and clamp in position. The sample holder was then removed from the sample preparation table by turning it upside down. A smooth surface of sample was obtained to ensure optimum results.

2.3.2. Particle Size Distribution (PSD) Analysis

The average particle size and particle size distribution were analyzed using Malvern Mastersizer 2000, UK with a detection range between 0.01 μm to 3000 μm. The sample unit was filled with the dispersant medium and operated the stirrer at 2500 rpm. Alignment of the optics was done and the background measurement was taken. After the background measurement, the sample was added in to the sample unit with constant monitoring the obscuration and stopped the addition of sample when the obscuration reached in between 15% to 20%. When the obscuration was stable, the measurement was taken twice and the average was taken of two measurements. The average histogram of the two measurements was recorded. Along with histogram, the data was presented in table format which include particle size (μm). Also, the values at below 10% level (d₁₀), 50% level (d₅₀), and 90% level (d₉₀) were calculated from the histogram and the calculations such as surface area (m²/g) were done by using software Mastersizer 2000.

Percent change in particle size (d) for at below 10% level (d₁₀), 50% level (d₅₀), and 90% level (d₉₀) was calculated using following equation (1):

$$\% \text{ change in particle size} = \frac{[d_{\text{Treated}} - d_{\text{Control}}]}{d_{\text{Control}}} \times 100 \quad (1)$$

Where, d_{Control} and d_{Treated} are the particle size (μm) for at below 10% level (d₁₀), 50% level (d₅₀), and 90% level (d₉₀) of the control and treated samples, respectively.

Percent change in surface area (S) was calculated using following equation (2):

$$\% \text{ change in surface area} = \frac{[S_{\text{Treated}} - S_{\text{Control}}]}{S_{\text{Control}}} \times 100 \quad (2)$$

Where, S_{Control} and S_{Treated} are the surface area of the

control and treated samples, respectively.

2.3.3. Fourier Transform Infrared (FT-IR) Spectroscopy

FT-IR spectroscopy of ashwagandha root extract was performed on Spectrum two (Perkin Elmer, USA) Fourier transform infrared spectrometer with the frequency array of 400-4000 cm^{-1} by using pressed KBr disk technique.

2.3.4. Ultra Violet-Visible Spectroscopy (UV-Vis) Analysis

The UV-Vis spectral analysis was carried out using Shimadzu UV-2450 with UV Probe, Japan. The spectrum was recorded using 1 cm quartz cell that has a slit width of 1.0 nm. The wavelength range chosen for recording the spectra was 190-800 nm. The absorbance spectra (in the range of 0.2 to 0.9) and wavelength of maximum absorbance (λ_{max}) were recorded.

2.3.5. Thermal Gravimetric Analysis (TGA)

TGA analysis was performed using Instrument TGA Q50 (TA Instruments, USA) at a heating rate of 10°C/min from room temperature *i.e.* 30°C to 900°C under nitrogen atmosphere. A total of ~13.5 mg of sample was used for the analysis and was taken on the platinum pan. In TGA, the weight loss for each step was recorded in grams as well as in percent loss with respect to the initial weight. Also, the onset, endset, and peak temperature for each step were recorded in TGA.

Percent change in weight loss (W) was calculated using following equation (3):

$$\% \text{ change in weight loss} = \frac{[W_{\text{Treated}} - W_{\text{Control}}]}{W_{\text{Control}}} \times 100 \quad (3)$$

Where, W_{Control} and W_{Treated} are the weight loss of the control and The Trivedi Effect[®] treated samples, respectively.

2.3.6. Differential Scanning Calorimetry (DSC)

Analysis was performed using the DSC Q20 (TA Instruments, USA) differential scanning calorimeter. A total of ~4 mg sample was weighed and sealed in aluminum pan and equilibrated at 25°C and heated up to 450°C at the heating rate of 10°C/min under nitrogen gas as purge atmosphere with flow rate of 50 mL/min. The value for onset, endset, peak temperature, peak height (mJ or mW), peak area, and change in heat (J/g) for each peak were recorded.

Percent change in melting point (T) was calculated using following equation (4):

$$\% \text{ change in melting point} = \frac{[T_{\text{Treated}} - T_{\text{Control}}]}{T_{\text{Control}}} \times 100 \quad (4)$$

Where, T_{Control} and T_{Treated} are the melting point of the control and treated samples, respectively.

Percent change in latent heat of fusion (ΔH) was calculated using following equation 5:

$$\begin{aligned} &\% \text{ change in latent heat of fusion} \\ &= \frac{[\Delta H_{\text{Treated}} - \Delta H_{\text{Control}}]}{\Delta H_{\text{Control}}} \times 100 \quad (5) \end{aligned}$$

Where, $\Delta H_{\text{Control}}$ and $\Delta H_{\text{Treated}}$ are the latent heat of fusion of the control and treated samples, respectively.

3. Results and Discussion

3.1. Powder X-Ray Diffraction (PXRD) Analysis

Powder X-ray diffraction study was carried out to examine the crystalline pattern of the control and Biofield Energy Treated ashwagandha root extract. Figure 1 showed the PXRD diffractograms of both the control and Biofield Energy Treated sample, which did not contribute any diffraction peaks. It was then concluded that both samples are amorphous in nature and the Biofield Energy Treatment has no effect compared to the control sample.

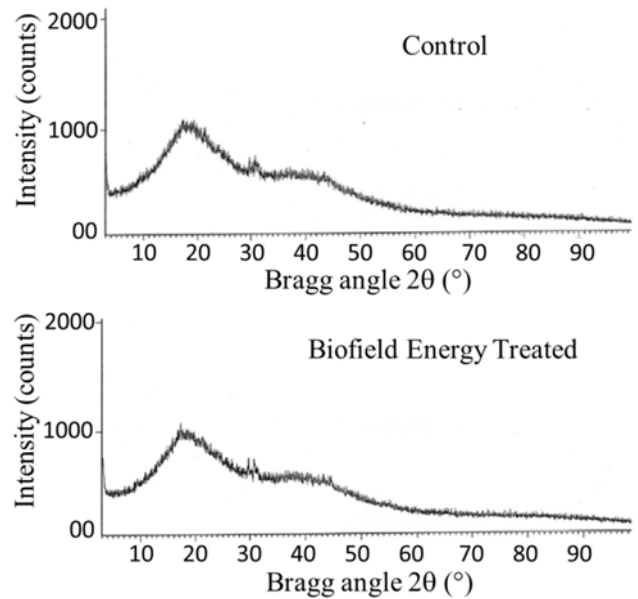


Figure 1. PXRD diffractograms of the control and Biofield Energy Treated *W. somnifera* (Ashwagandha) root extract.

3.2. Particle Size Distribution (PSD) Analysis

Particle size distribution analysis of the control and Biofield Energy Treated ashwagandha root extract was performed and the results are presented in Table 1. The particle size values of the Biofield Energy Treated ashwagandha root extract at d_{10} , d_{50} , and d_{90} were significantly decreased by 18.88%, 8.60%, and 4.00%, respectively compared to the control sample (Table 1). Similarly, the surface area of the Biofield Energy Treated ashwagandha root extract (0.077 m^2/g) was significantly increased by 102.63% compared to the control sample (0.038 m^2/g).

Table 1. Particle size (d_{10} , d_{50} , and d_{90}) and surface area of the control and Biofield Energy Treated *W. somnifera* (Ashwagandha) root extract.

Parameter	d_{10} (μm)	d_{50} (μm)	d_{90} (μm)	Surface area (m^2/g)
Control	88.17	206.44	395.22	0.038
Biofield Energy Treated	71.52	188.68	379.42	0.077
Percent change (%) [*]	-18.88	-8.60	-4.00	102.63

^{*}denotes the percentage change in the particle size (d_{10} , d_{50} , and d_{90}) and surface area of the Biofield Energy Treated sample with respect to the control sample.

The results revealed that there might be an effect of Biofield Energy Treatment in the intrinsic physico-chemical properties of ashwagandha root extract. Many literature mentioned that particle size, shape and surface area of the pharmaceuticals/nutraceuticals have an important impact on solubility, dissolution rate, *in vivo* bioavailability, dose uniformity and therapeutic efficacy as well as assist in the design of the new drug delivery systems [48, 51]. Decrease in particle size, and increase in the surface area increase the solubility of the solid particles as well as enhance the dissolution rate and bioavailability [52]. Thus, it is anticipated that The Trivedi Effect[®] treated ashwagandha root extract might be absorbed in faster rate and thus, can provide better bioavailability than the untreated sample.

3.3. Fourier Transform Infrared (FT-IR) Spectroscopy

Table 2. FT-IR data of the control and Biofield Energy Treated *W. somnifera* (Ashwagandha) root extracts.

Entry No.	Mode of vibration	Characteristic absorption (s) of ashwagandha root extract (cm ⁻¹)	
		Control	Biofield Treated
1	O-H stretching	3413	3401
2	C-H stretching	2929	2929
3	C=O stretching (α , β -unsaturated ketone)	1682	1684
4	C-C stretching	1516, 1457, 1383, 1322	1516, 1457, 1383, 1322
5	C-O in alkoxy	1128, 1077, 1033	1128, 1077, 1035
6	C-H aromatic bending	844, 618	844, 617

The FT-IR spectra of both the control and Biofield Energy Treated ashwagandha root extract are presented in Figure 2. The FT-IR spectral data are presented in Table 2. The wavenumber of the absorbance (ν) of a diatomic can be calculated from the following equation derived from the Hooke's law (Equation 6):

$$\nu = \frac{1}{2\pi c} \sqrt{\frac{f(m_1 + m_2)}{m_1 m_2}} \quad (6)$$

Where, ν = vibrational frequency (cm⁻¹), c = the velocity of light (cm/s), m_1 and m_2 = the mass of atoms 1 and 2, respectively, in g, f = the force constant of the bond (dyne/cm).

Equation (6) showed that if other factors remain constant, the vibrational frequency (wavenumber) is directly proportional to the force constant *i.e.* for a certain functional group (for *e.g.* -C=O), changes in the vibrational frequency (wavenumber) indicate the alteration of the force constant. Several factors such as hybridization, resonance, bond strength, conjugation, *etc.* can affect the force constant [53, 54].

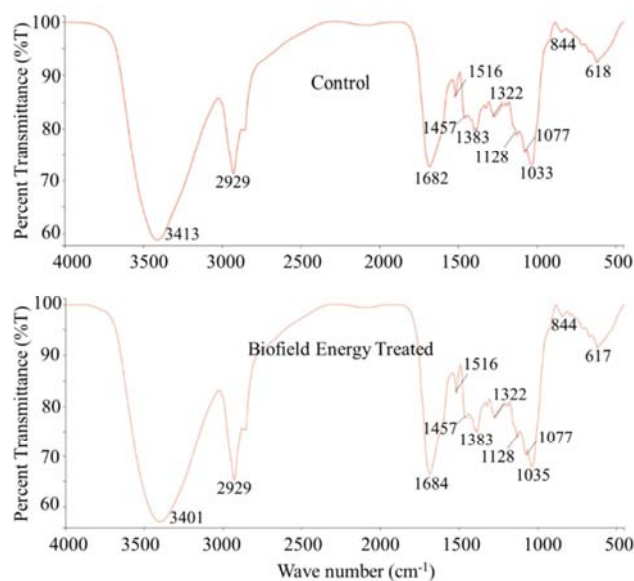


Figure 2. FT-IR spectra of the control and Biofield Energy Treated *W. somnifera* (Ashwagandha) root extract.

It has been observed that the vibrational frequencies for the C-H, C-C, C-O, and C=O groups of the Biofield Energy Treated ashwagandha were almost similar to the control sample (Figure 2; Table 2, entry 1-6). The spectra indicated the O-H stretching at 3413 cm⁻¹ in the control sample, and was shifted downward to 3400 cm⁻¹ in the Biofield Energy Treated sample. It indicated that there was the reduction in force constant of O-H functional group in the Biofield Energy Treated sample compared with the control sample. The broad peak at 3600-3200 cm⁻¹ may be due to the O-H functional group frequency of the hydroxyl groups present in *Withania somnifera*. It indicated that the force constant of these groups was remained unchanged. The presence of epoxide, unsaturated lactone, 1-keto-2-ene functions play a vital role to elicit the pharmacological activities of withanolides [14, 55-57]. In summary, FT-IR results suggest that there was a little impact of Biofield Energy Treatment on *Withania somnifera* at the atomic level to reduce the force constant of O-H (str.) bond.

3.4. Ultraviolet-Visible Spectroscopy (UV-Vis) Analysis

The UV-visible spectra of the control and Biofield Energy Treated ashwagandha root extract are shown in the Figure 3. The wavelength for the maximum absorbance (λ_{max}) of the control and Biofield Energy Treated ashwagandha root extracts were at 207.4 and 207.7 nm, respectively and there was a minor shift of absorbance maxima from 1.5855 in the control sample to 1.0831 in the Biofield Energy Treated sample. The UV absorbance occurs due to the different type of energy transitions from the singlet to the singlet excited state such as $\alpha \rightarrow \alpha^*$, $n \rightarrow \pi^*$, and $\pi \rightarrow \pi^*$. These type of electronic transitions are happened when the difference in energy between the lowest unoccupied molecular orbital (LUMO) and the highest occupied molecular orbital (HOMO) is significantly higher than the activation energy of the compound [59]. It has been reported that the wavelength

for the maximum absorbance for the ashwagandha root extract was at 208.50 nm. Thus, no significant change in the λ_{\max} of the Biofield Energy Treated sample was observed compared to the control sample. Hence, it is anticipated that the structure of the phytoconstituents in the treated sample was remained unaffected as compared with the control sample.

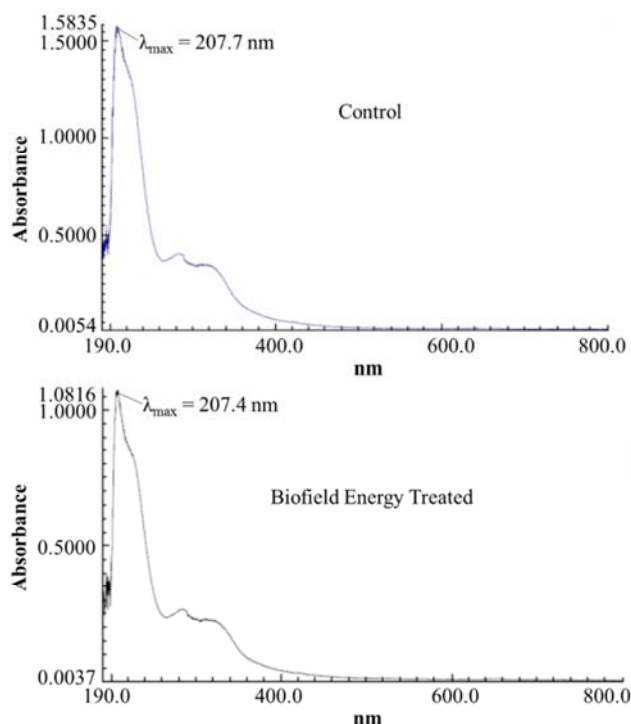


Figure 3. UV-vis spectra of the control and Biofield Energy Treated *W. somnifera* (Ashwagandha) root extracts.

3.5. Thermal Gravimetric Analysis (TGA)

TGA was carried out to investigate the thermal stability of the control and Biofield Energy Treated ashwagandha root

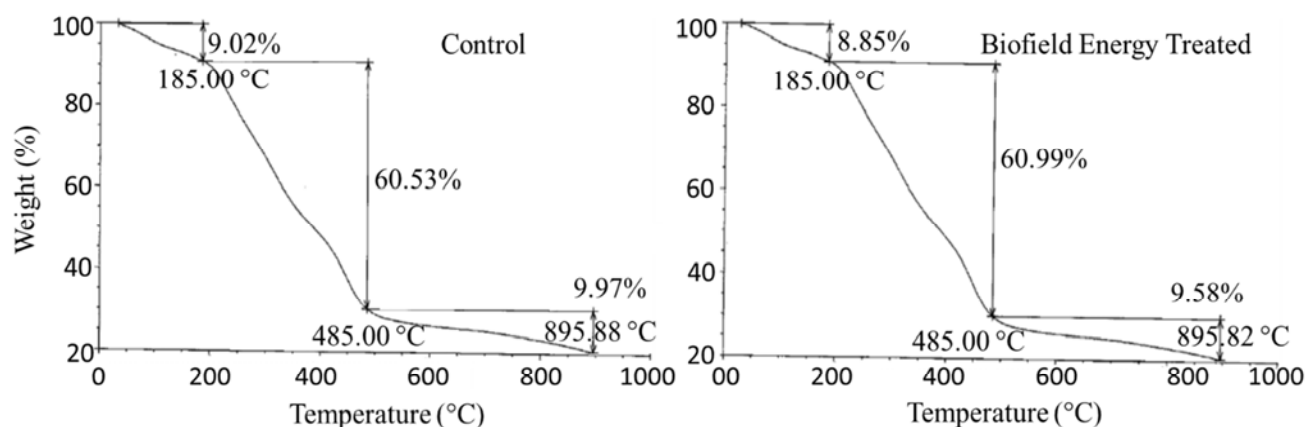


Figure 4. TGA thermograms of the control and Biofield Energy Treated *W. somnifera* (Ashwagandha) root extract.

extracts. The TGA analysis showed three steps of thermal degradation as mentioned in Table 3 and Figure 4.

Table 3. Thermal degradation steps of the control and Biofield Energy Treated *W. somnifera* (Ashwagandha) root extract.

S. No.	Temperature (°C)		% Weight loss		% Change*
	Control	Treated	Control	Treated	
1 st step of degradation	185.00	185.00	9.02	8.85	-1.88
2 nd step of degradation	485.00	485.00	60.53	60.99	0.76
3 rd step of degradation	895.00	895.82	9.97	9.58	-3.91
Total weight loss	--	--	79.52	79.42	-0.13

*denotes the percentage change in the weight loss of the Biofield Energy Treated sample with respect to the control sample.

In the 1st and 3rd steps of thermal degradation, the weight loss of the Biofield Energy Treated sample was decreased by 1.88% and 3.91%, respectively compared with the control sample. But, in the 2nd step of thermal degradation, the weight loss of the Biofield Energy Treated sample was slightly increased by 0.76% compared with the control sample (Table 3). However, the total weight loss of the Biofield Energy Treated sample (79.42%) was reduced by 0.13% compared with the control sample (79.52%). It is then anticipated that Biofield Energy Healing Treatment might enhance the thermal stability of ashwagandha root extract.

The DTG thermograms of the control and Biofield Energy Treated ashwagandha root extract (Figure 5) displayed two broad peaks. The maximum thermal degradation temperature at 272.73°C and 393.14°C for two broad peaks in the Biofield Energy Treated ashwagandha root extract was increased by 1.13% and 0.85%, respectively compared to the control the sample (269.68°C and 389.83°C). Overall, the thermal stability of the Biofield Energy Treated ashwagandha was increased compared to the control sample.

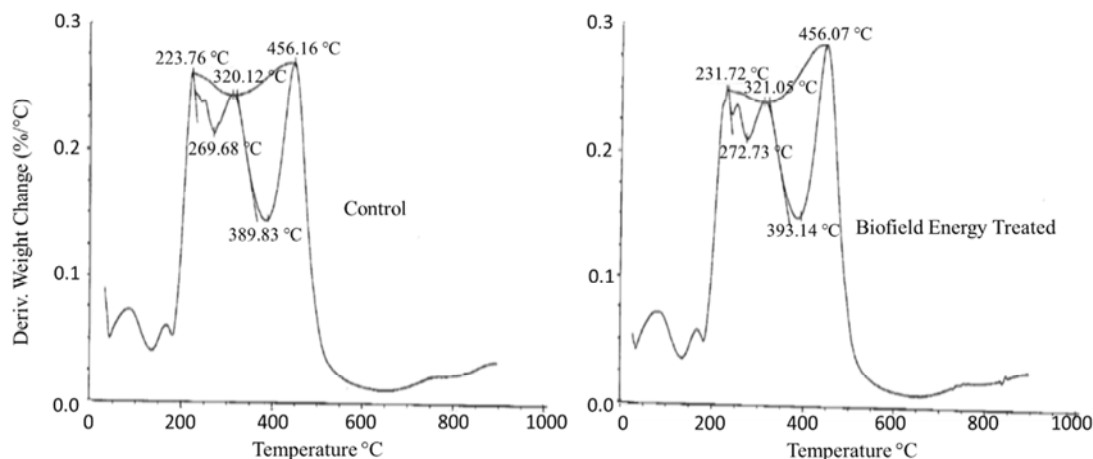


Figure 5. The DTG thermograms of the control and Biofield Energy Treated *W. somnifera* root extract.

3.6. Differential Scanning Calorimetry (DSC) Analysis

The DSC thermograms of the control and Biofield Energy Treated ashwagandha root extract are presented in the Figure 6 and Table 4. The DSC thermograms of the control and Biofield Energy Treated samples indicated the presence of a broad endothermic inflection at 85.82°C and 86.98°C, respectively which may be the evaporation of the bounded water present in the ashwagandha root extract. This evaporation temperature and latent heat of vaporization were increased by 1.35% and 5.52%, respectively in the Biofield Energy Treated sample compared with the control sample (Table 4).

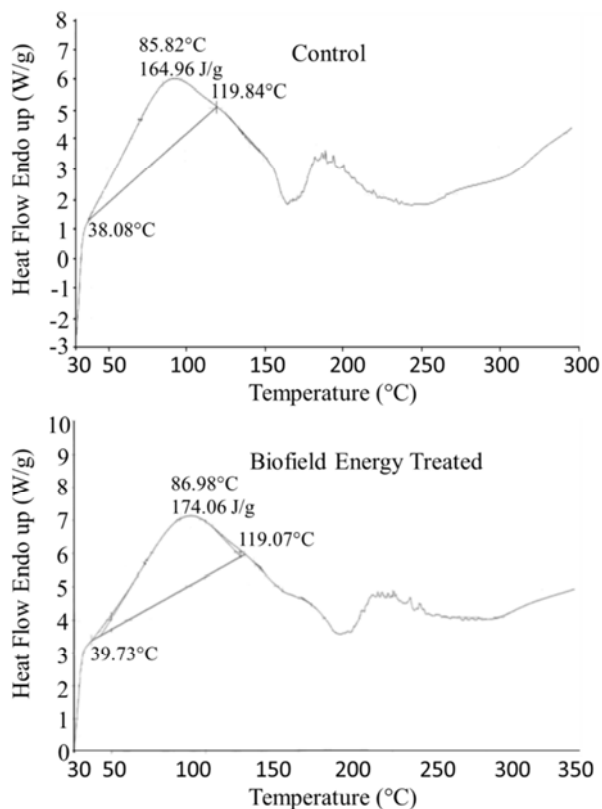


Figure 6. DSC thermograms of the control and Biofield Energy Treated *W. somnifera* (Ashwagandha) root extract.

Table 4. The melting point (°C) and latent heat of fusion (J/g) values of the control and Biofield Energy Treated *W. somnifera* (Ashwagandha) root extract.

Sample	(T_{onset}) °C	(T_{peak}) °C	(T_{endset}) °C	($\Delta H_{\text{vaporization}}$) J/g
Control	38.08	85.82	119.84	164.96
Biofield Energy Treated	39.73	86.98	119.07	174.06
% Change*	4.33	1.35	-0.64	5.52

T_{onset} : Onset vaporization temperature, T_{peak} : Peak vaporization temperature, T_{endset} : Endset vaporization temperature, ΔH : Latent heat of vaporization, *denotes the percentage change of the Biofield Energy Treated sample with respect to the control sample.

It is assumed that the Biofield Energy Healing Treatment might altered the intermolecular force in the Biofield Energy Treated sample, which probably increases the heat change. This result suggests that the temperature for water removal of the Biofield Energy Treated sample was increased compared to the control sample. However, Biofield Energy Treated, and control *W. somnifera* indicated several endothermic peak around 200°C (Figure 6). Several small endothermic peaks were also observed in the thermogram of both in control and treated samples, which may be due to the multiple phytoconstituents present in the root extract in a very small concentration [60, 61].

4. Conclusions

The study revealed that The Trivedi Effect® - Consciousness Energy Healing Treatment (Biofield Energy Healing Treatment) has the significant effect on the particle size, surface area and thermal stability of the ashwagandha root extract. PXRD analysis demonstrated that both the control and treated samples were amorphous in nature. The particle size values at d_{10} , d_{50} , and d_{90} of the treated sample were decreased significantly by 18.88%, 8.60%, and 4.00%, respectively compared with the control sample. Similarly, the surface area of the treated sample was significantly increased by 102.63% compared to the control sample. FT-IR results suggest that there was a little impact of Biofield Energy Treatment on ashwagandha root extract at the atomic level to reduce the force constant of O-H (str.) bond.

TGA revealed the three steps of thermal degradation steps and the total weight loss was decreased by 0.13% in the treated sample compared with the control sample. Consequently, the maximum thermal degradation temperature for two broad peaks in the treated sample was increased by 1.13% and 0.85% compared to the control sample. DSC analysis indicated that the evaporation temperature and latent heat of vaporization were increased by 1.35% and 5.52%, respectively in the treated sample compared with the control sample. The overall thermal analysis indicated that the treated sample was thermally more stable as compared to the control sample. In summary, The Trivedi Effect[®] - Energy of Consciousness Healing Treated ashwagandha root extract could have better solubility, absorption, dissolution, bioavailability, and long-term storage stability compared with the control sample and could be suitable for any pharmaceutical and nutraceutical formulation which might be providing better therapeutic response against various diseases such as diabetes mellitus, allergies and septic shock, stress-related disorders like sleep disorder, anxiety, insomnia, depression, Attention Deficit Disorder (ADD), Attention Deficit Hyperactive Disorder (ADHD), mental restlessness (mind chattering), low libido, brain fog, impotency, lack of motivation, mood swings, confusion, fear of the future, migraines, headaches, forgetfulness, overwhelm, loneliness, indecisiveness, worthlessness, frustration, irritability, chronic fatigue, obsessive/compulsive behavior and panic attacks; immunological and inflammatory diseases disorders like Lupus, Systemic Lupus Erythematosus, Hashimoto Thyroiditis, Type 1 Diabetes, Chronic peptic ulcers, Asthma, Tuberculosis, Hepatitis, Chronic active hepatitis, Celiac Disease (gluten-sensitive enteropathy), Addison Disease, Graves' Disease, Crohn's disease, Pernicious and Aplastic Anemia, Sjogren Syndrome, Rheumatoid arthritis, Irritable Bowel Syndrome (IBS), Multiple Sclerosis, Chronic periodontitis, Myasthenia Gravis, Ulcerative colitis, Chronic sinusitis, Atherosclerosis, Diverticulitis, Vasculitis, Dermatitis, Rheumatoid Arthritis, Reactive Arthritis, Psoriasis, Alopecia Areata, Scleroderma, Fibromyalgia, Chronic Fatigue Syndrome and Vitiligo; aging-related diseases like cardiovascular disease, Alzheimer's disease, arthritis, cancer, dementia, cataracts, osteoporosis, diabetes, glaucoma, hypertension, hearing loss, Parkinson's Disease, Huntington's Disease, Prion Disease, Motor Neurone Disease, Spinocerebellar Ataxia, Amyotrophic lateral sclerosis, Spinal muscular atrophy, Friedreich's Ataxia and Lewy Body Disease, chronic infections, and many more.

Abbreviations

DSC: Differential scanning calorimetry, FT-IR: Fourier transform infrared spectroscopy, HOMO: Highest energy occupied molecular orbital, LUMO: Lowest energy unoccupied molecular orbital, TGA: Thermal gravimetric analysis, T_{peak} : Peak vaporization temperature, ΔH : Latent

heat of vaporization, UV-vis: Ultraviolet-visible spectroscopy, PSD: Particle size distribution, PXRD: Powder X-ray diffraction.

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