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UNIQUE HERBAL AYURVEDIC PREPARATION USED FOR THE TREATMENT OF PULMONARY COMPLICATIONS SUCH AS ASTHMA, WHEEZING AND TUBERCULOSIS

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ABSTRACT

Ayurevedic system of medicine, which is originated in India long back in prevedic period, deals elaborately with measures for healthful living during the entrire span of life and its various phases. The important step involved in the procedure for making Ayurvedic formulation plant juices and high temperature calcinations. It's one of the herbo-mineral preparation in which the herbal Plant *Althaea officinalis L,* Amaranthus spinosus and *Cinnamomumcamphora* was treated with Lime Water. This preparation has been administrated along with adjuvants such as butter, ghee or honey. This can lead to better absorption, bioavailability and to reduce the toxicity of the particular test drug. Unique- herbal Ayurvedic preparation, used in the treatment of pulmonary complications such asasthma, wheezing and tuberculosis and it is one of unique metallic-herbal Ayurvedic preparation.

KEYWORDS

Althaea officinalis L, *Amaranthus spinosus, Cinnamomumcamphora*, Lime water and Unique- herbal Ayurvedic preparation.

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INTRODUCTION

The study of ancient Ayurvedic literature indicates the use of minerals, gems and metals has begun in 7th century BC. The non-metals used for the Ayurevedic drugs are gold, silver, copper, lead, tin, Zinc and some of their alloys. A large number of processes have been described for the preparation of non-metallic Ayurvedic formulation in Ayurveda has been discussed. Metal based drugs known as Ayurvedic formulations play a major role in Ayurevedic medicine and are used in the treatment

of a variety of conditions. Ayurvedic formulations are actually calcinated herbo non-metallic preparations that contain biologically active compounds[1,2]. The process of preparation of Ayurvedic formulation can be classified into two main groups, metal extraction and conversion of the purified metal or its alloy into nontoxic Ayurvedic formulation due to risk of metal poisons so we avoid metal in this preparation. So the composition of Unique- herbal Ayurvedic preparation contains Althaea officinalis. L, Amaranthus spinosus, Camphor and Lime water[3,4].

***Althaea officinalis l.* (malvaceae)**

Is the dried root and the common name for this plant called Marshmallow root. Herbal medicines containing these marshmallow root preparations are usually available as herbal tea to be drunk or in solid or liquid forms to be taken by orally. It's used medicinal plant since, ancient time for the treatment of the irritation of laryngopharyngeal mucosa and hence associated dry cough and upper respiratory tract infection. Starch (25-35%), pectins (11%), saccharose (10%), mucilage (5%), flavonoids, caffeic acid, p-coumaric acid, isoquercitrin, coumarins, phytosterols, tannins, etc., as well as many amino acids (Gudej, 1991, Bradley, 1992)[5,6].

Amaranthus spinosus

(Synonyms: Needle burr, Spiny amaranth, Spiny pigweed.) It's appears in a range of climatic conditions but shows frost intolerance at some sites. It is not associated with particular soil types but grows best in well drained but moist situations. It is on acid, basic and neutral soils. It prefers sunny sites and will not grow well in shaded situations. *A. spinosus* occurs on disturbed ground, Along roadsides, railway lines, neglected land, tip sites and poorly maintained grazing land. It is also occurs as a weed of varying significance in a variety of crops and horticultural enterprises. Arial part used for tropical medicinal purpose. It contains Chemical constituents of Saponins, Hentriacontane, α-spinasterol, α-spinasterol octocosanoate, ß-sitosterol, stigmasterol, campesterol, cholesterol, stearic, oleic and linoleic acid[1,7].

Camphor

Camphor is a transparent or white waxy substance with a pungent aroma. It is a terpenoid with the chemical formula C10H16O. It is found in the wood of Dryobalanops aromatica, a giant of the Bornean forests, and the camphor laurel (Cinnamomum camphora), a large evergreen tree that is found in Asia, particularly in Borneo and Taiwan. It can be made synthetically from turpentine oil. It is used for its aroma, as a cooking ingredient (mostly in India), as an embalming fluid, in religious ceremonies, and as a medicine. Camphor basil is a significant Asian source of camphor.-pinene, which is abundant in the oils of coniferous trees, and turpentine, which is produced as a byproduct of chemical pulping, can be used to make camphor. Camphene undergoes Wagner-Meerwein rearrangement into the isobornyl cation, which is captured by acetate to produce isobornyl acetate through the use of acetic acid as the solvent and catalysis by a strong acid. Camphor is produced by hydrolysis into isoborneol and dehydrogenation[8,9].

Lime water

Saturated calcium hydroxide solution is commonly referred to as lime water. Ca(OH) 2 is its chemical formula. Due to the fact that calcium hydroxide is only slightly soluble Ca(OH) 2At 25°C, 1.5g per liter makes no discernible difference to clear water. An earthy scent would be detected by attentive observers. The calcium hydroxide's alkaline flavor makes it easy to tell apart. The mineral rather than fruit sense of lime serves as the basis for the term. Lime water turns into a milky solution when exposed to carbon dioxide. Repeated treatment of a particular metal with plant juices and high-temperature calcification in an earthen pot are the crucial steps in the formulation process. Different tests both physical and compound for affirming the arrangements have been portrayed in the old Ayurvedic literature[10,11].

However, all these are highly empirical and hardly provide any information on the composition and structural properties of this mixed unique herbal preparation. Therefore, it is highly desirable that

these drugs should be characterized with the help of modern instruments, such as Particle Size Analyzer (PSA), Scanning Electron Microscopy (SEM), Fourier Trans form Infrared spectroscopy (FTIR) and X-ray diffraction (XRD).

MATERIAL AND METHODS

Plant collected

Althaea officinalis L, Amaranthus spinosus and *Cinnamomumcamphora*, all the plant collected in Ooty forest area.

Equipment used

Particle Size Analysis (Microtrac Blue wave Particle Size Analyzer with Tri-laser Technology). *Scanning Electron Microscopy* JSM-6701F is a super intelligent PC SEM. Fourier Trans form Infrared spectroscopy and X-ray diffraction.

Flow chart for the preparation of ayurvedic formulation

Raw material - (Althaea officinalis. L70gm, Amaranthus spinosus 130gm, Camphor 50gm)

↓

Sodhana - (Leaves and camphor are finely Triturated to form fine paste)

↓

Trituration - (Then this paste was allowed to dried for 4hrs.)

↓

Pellestisation - (Calcinated product is treated with lime water for 1 hr)

↓

Satvapatana - (Again calcinated for 4hrs)

↓

Final Product

RESULTS AND DISCUSSION

Particle size analysis

While chemical properties, efficacy, and purity are typically well-defined in pharmaceutical analysis, physical properties like particle size are frequently overlooked. Particle sizes between 1-2m were found to be 50% and between 2 and 2.3m were found to be 45% of the total in the PSA results. 5 percent remain in the Nanorange. With a mean particle size of 1.853 millimeters, it efficiently produces high-quality finished goods. The Particle Size Graph given Figure No.1 and the size of the molecule in molecule appropriation given in Table No.1.

Scanning electron microscopy

Figure No.2 depicts the SEM images taken for the standard drug of the Unique-herbal Ayurvedic preparation, which highlight the distinct characteristics of the two samples. The drug Unique-herbal Ayurvedic preparation had spongy, relatively compact microcrystalline aggregates with no grain boundaries, whereas the standard Unique-herbal Ayurvedic preparation had a well-defined plate-like structure. Agglomeration of plate-like crystals led to the sample's average particle size of 130.0nm and 155.6nm at 100nm.

Fourier transform infrared spectroscopy

FTIR Spectrum of Unique- herbal Ayurvedic preparation in the region (400-1000cm^{-1}) was studied. FTIR spectrum of Unique- herbal Ayurvedic preparation in the region from 400-1600cm^{-1} is shown. There are fairly sharp peaks at 806, 848, 974 and 1057cm^{-1} which indicate the presence of the organic compounds in the drug.

X-ray diffraction of unique- herbal ayurvedic preparation

The Ideal Specimen is a statistically indeterminate quantity of powder mounted in a manner in which there is no preferred crystallite orientation and having a crystallite size of less than 10m. The preparation of the spl specimen is typically the most important factor in determining the quality of your analytical data in this day and age of automated data collection and analysis. Sample preparation is a significant topic in this course. Figure No.3. X-ray Diffraction obtained for Unique- herbal Ayurvedic preparation.

Table No.1: Tabular column indicating the size of the particle in particle distribution

S.No	Summary			Percentiles			Size Percent	
	Data	Value		%Tile	Size (um)		Size (um)	%Tile
1	MV(um)	1.747		10.00	1.139		0.0540	0.00
2	MN(um)	1.397		20.00	1.361		0.0789	0.00
3	MA(um)	1.689		30.00	1.859		0.1110	0.00
4	CS	3.56		40.00	1.998		0.1487	0.00
5	SD	0.502		50.00	2.049		0.1813	0.00
6				60.00	2.106		0.2138	0.00
7	Mz	1.849		70.00	2.161		0.2601	0.00
8	бv	0.445		80.00	2.218		0.349	0.00
9	Ski	0.59042		90.00	2.290		0.600	0.00
10	Kg	0.770		95.00	2.349		0.863	1.05

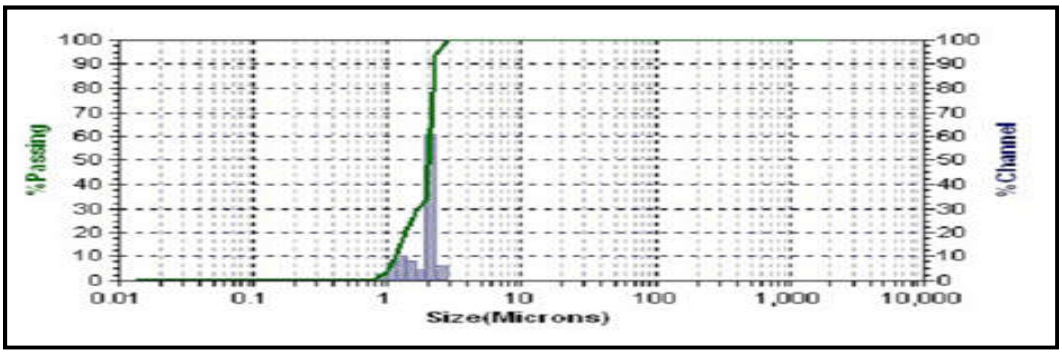
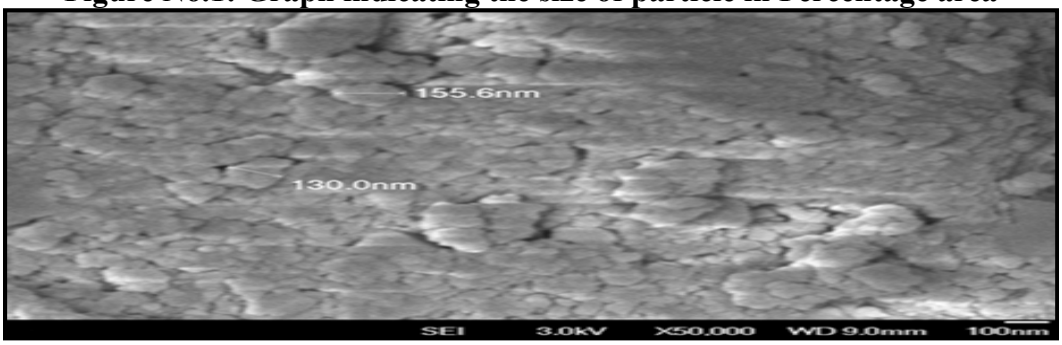
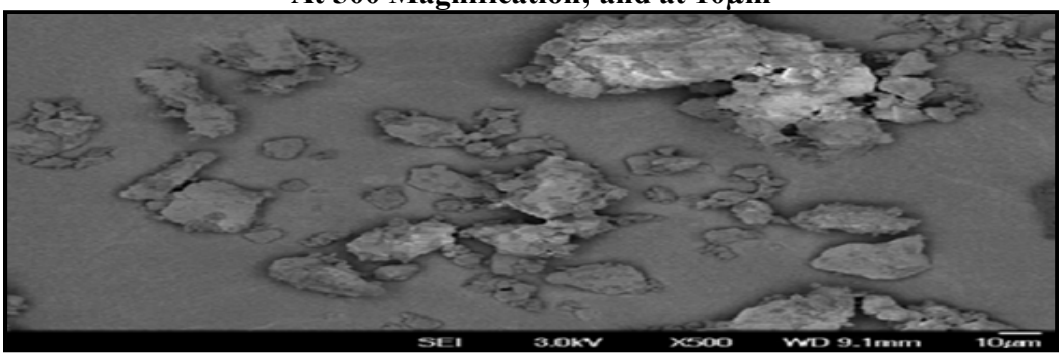


Figure No.1: Graph indicating the size of particle in Percentage area



At 500 Magnification; and at 10µm



At 100 Magnification; and 100µm

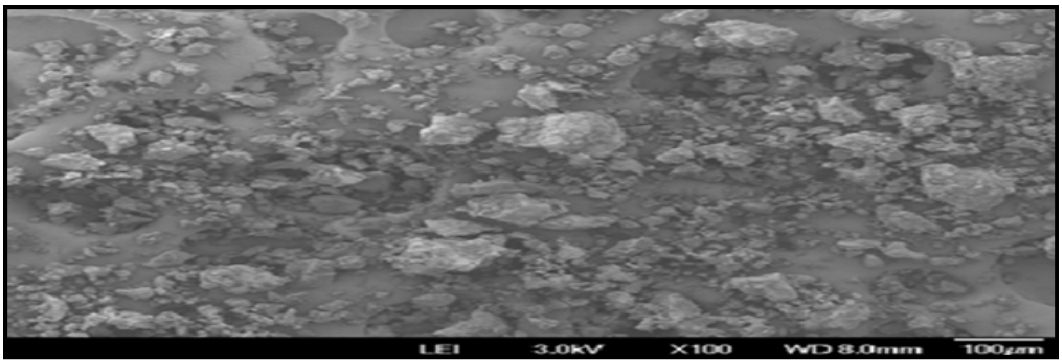


Figure No.2: Scanning Electron Microscopy (SEM) pictures obtained at different Magnifications [Note: Based on the results obtained it is observed that Unique- herbal Ayurvedic preparation contain Nanosized particles]

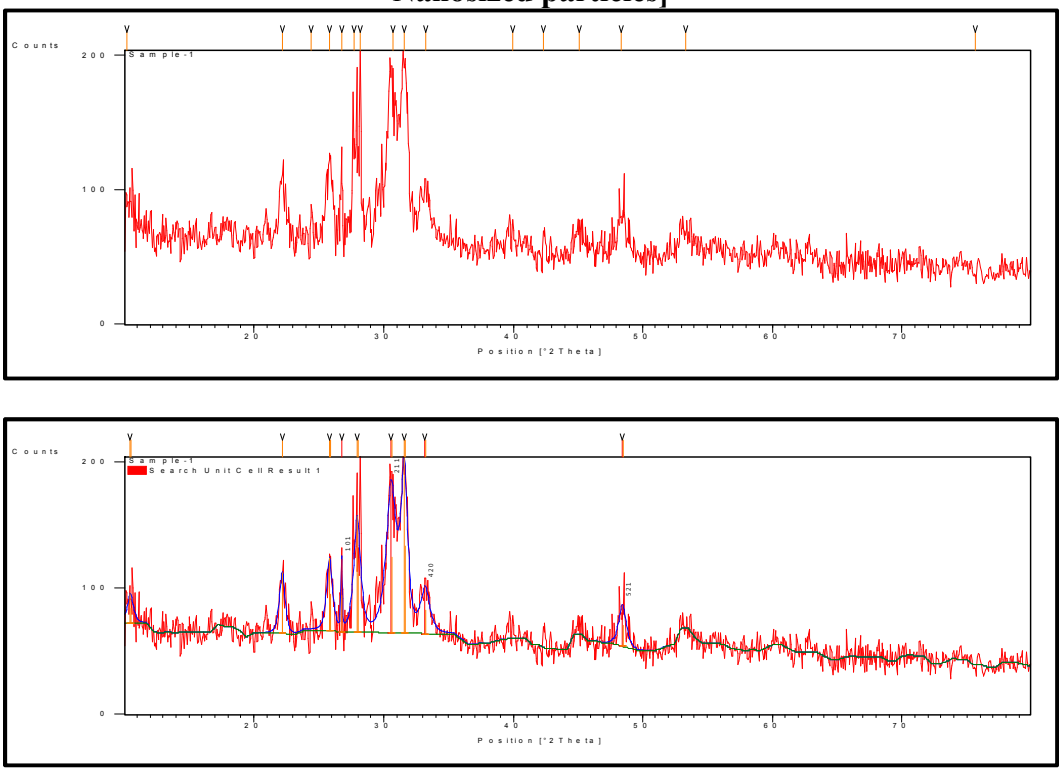


Figure No.3: X-ray Diffraction obtained for unique- herbal ayurvedic preparation

CONCLUSION

PSA, SEM and XRD results were examined in order to determine the composition of an Indian traditional drug known as "Unique- herbal Ayurvedic preparation."Microparticles were detected by particle size analysis. This might improve bio-retention and adequacy. These findings contribute to the standardization of the traditional drug's specifications and offer useful insights into its therapeutic properties.

One of the unique herbal Ayurvedic preparations used in the treatment of pulmonary complications like asthma, wheezing and tuberculosis. Althaea officinalis L, Amaranthus spinosus, Cinnamomum camphora and lime water are all included in this preparation. Adjuvants like butter, ghee, or honey have been used to administer this preparation. This may result in improved bioavailability, absorption, and toxicity reduction for the particular test drug.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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