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Calcarea Carbonica and *Tinospora cordifolia* as Nanomedicine

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Abstract

Background: Calcarea carbonica is derived from middle layer of oyster shell and ecdysteroid hormone is derived from leaves extract of *Tinospora cordifolia*.

Objectives: The knowledge of crystallite size and active ingredients in Calcarea carbonica and *Tinospora cordifolia* having specific use as nanomedicine in the modern era. Therefore, the different chemical and physical properties of prepared extract of Calcarea carbonica and *Tinospora cordifolia* has been studied by modern experimental tools (XRD, SEM, FTIR) and the preliminary testing of the extract has shown nanoparticles on examination.

Materials and methods: The medicinal sample of calcarea carb and *Tinospora cordifolia* was prepared according to homoeopathic pharmacopoeia of India volume 2 editions 2007 and were studied by method of SEM, FTIR and XRD.

Results: The study shows that homoeopathic medicine based on nanoscience the traced nanoparticles gives evidence of calcium ions in Calcarea carbonica and ecdysteroids in the leaves of *Tinospora cordifolia* which is rich in calcium ions.

Conclusion: The preparation of the medicine based on homoeopathic principle shows sequential diluting initial substance might be encoded as epitaxial film on calcium rich crystals shaped nanoparticles observed in homoeopathic medicine. The structure and size of data encoded on nanoparticles might differ with degree of dilution as homoeopathic medicine shows healing properties such nanoparticles with interfacial on their surface have to transmit. The power of medication denote as potency through the consecutive technique up to in certain potency. The particle of medicine visible below scanning is feasible but in some potencies it had been determined the invisibilities of particle in drugs that produces major doubt for homoeopathic medicine and healing effects.

Keywords: Ethiopia Calcarea Carbonica • Potency • Nano Particles • $CaCO_3$

Introduction

A Calcium carbonate is a mineral that's widely distributed in nature, originating from both biological sources and inorganic mineralogical processes $CaCO_3$ is used within the production of civil construction materials, also as in agriculture, food, cosmetics, and pharmaceuticals. In biomedicine, $CaCO_3$ is utilized in the shape of nanoparticles to form drug delivery systems for cancer treatment [1,2]. Additionally, a remarkable use of $CaCO_3$ is as an active ingredient in food supplements to forestallosteoporosis. Calcarea carbonica, abbreviated as Calcarea carb a remedy made from the middle layer of oyster shells. In chemical terms, Calcarea carbonica is impure carbonate, $CaCO_3$ not like most homeopathic remedies that are made from substances soluble in water or alcohol, Calcarea carbonica should be ready by a technique referred to as trituration. Triturated material is grounded or pounded till it's reduced to a fine powder. According to homoeopath, the invention of trituration is a tribute to the genius of Samuel Hahnemann, the founding father of homoeopathy [3]. His technique of preparing insoluble substances delivered to light during this instance a whole world of therapeutic power once unknown. *Tinospora cordifolia*'s leaves contains ecdysteroid hormone which accommodate antiosteoporotic activity. The hormone constituent, 20hydroxyβecdysone, showed associate antiosteoporotic impact within the treatment of osteoporosis and osteoarthritis while not activating the estrogen Receptor. Ecdysone derivatives are well studied within the treatment of varied sex hormone and steroid disorders moreover as agerelated skin conditions. *T. cordifolia* has potential for the treatment of osteoporosis, degenerative joint disease and bone related issues [4].

This research article will indicate in the limited context of holy health sciences, the potential of traditional partnership between homeopathy and biology for expanding the frontiers of knowledge in the field of health sciences.

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Methods and Materials

Experimental techniques

The medicinal sample of calcarea carb and *Tinospora cordifolia* was accumulated per homoeopathic aggregation of India volume-2 edition 2007 and were studied by technique of SEM and XRD. *Tinospora* extract coated Calarea carbonica nanoparticles can only be detected through imaging methods like AFM, scanning electron microscopy (SEM), Grazing angle X Ray diffraction and Rietveld analysis (GXRD).

The crystal structure of $CaCO_3$ nanoparticles was studied employing a RigakuXray Powder Diffract meter with Cu anode (Cu K radiation=1.54186 Å) within the range of 20º to 80ºC at 30 kV. The particle size determined from TEM results and also calculated from XRD data using Scherer's formula. Samples for TEM examination were prepared by dispersing the nano$CaCO_3$ particles in ethanol in an ultrasonic bath for 10 min. FTIR spectra were recorded on a spectrophotometer using potassium bromide (KBr) pellets.

The morphology of the surface of the samples was analyzed using the Scanning electron microscope at 20 kV after the samples were sputtercoated

with a skinny platinum layer. Thermogravimetric analysis was carried out using TGA/DTA upto 800°C in air at the heating rate of 10°C/min after purging it with N_2 gas. The optical absorbance spectra were measured using UV-vis double beam at room temperature within the wavelength range 200-800 nm. Dried*Tinospora cordifolia* stems from Varanasi (latitude: 25°19′3.52″N and longitude: 82°58′26.09), India, were pulverized using an industrial blender and mixed with 250 mL of ethanol. The alcoholic solution, with a degree of 104.7 mg/mL, was filtered and placed in an oven at 45°C for 16 h to obtain a dry extract. A 13.2 mg/mL aqueous suspension was prepared in ultra-purified water and sonicated to obtain the nanoparticulate solution. The conditions of the ultrasonic treatment were 4 W and 40% amplitude for five min, employing a probe of 6 mm diameter. The solution was filtered with a sterile filter of 0.2 µm and diluted to 2.5 µg/mL, 25 µg/mL, and 250µg/mL concentrations using ultrapure water. The homogeneity of the mixed powders were verified by obtaining several Raman spectra for each mixture, focusing the ray of light at randomly selected parts of the surface.

Results and Discussion

The chemical structure of the natural extract and also the nanoparticle suspensions (TEC-NPs) was analyzed using FTIR. The surface morphologies as obtained from cockle shells powder before and once adding BS-112. whereas the rod-shaped mineral crystals clearly appeared within the cockle shells powder before adding BS-112, the larger clumps of smaller and clustered carbonate crystals were discovered when treatment with BS112. The SEM studies therefore advised that BS-12 most likely catalyzed the breakdown of larger particles into the smaller ones through the improvement of inter particle adhesion (Figure 1).

To visualize the carbonate particles more clearly, scanning electron micrographs were studied. The SEM pictures of cockle shells powder adding 2 mL of BS-112 are shown in Figure 2. Whereas the micron-sized different shape calcite mineral crystals of diameter 0.3nm were determined within the cockle shells powders without addition of any organic surface-active agent or catalyst the calcite shaped mineral crystals of diameter 300 ± 15 nm clearly appeared within the presence of 2mL of BS-112. Variety of previous studies indicated the formation of calcite shaped mineral crystals in presence of polyacrylamide or in absence of any organic substrates like polyacrylamide [5]. However, none of those studies obtained pure mineral crystals of homogeneous sizes

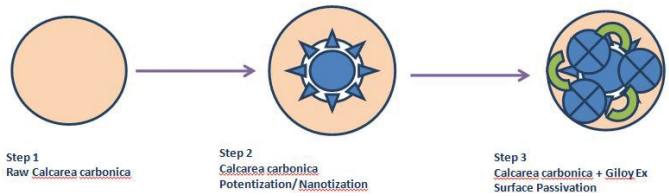

Figure 1. Homeopathic drug nanotization steps.

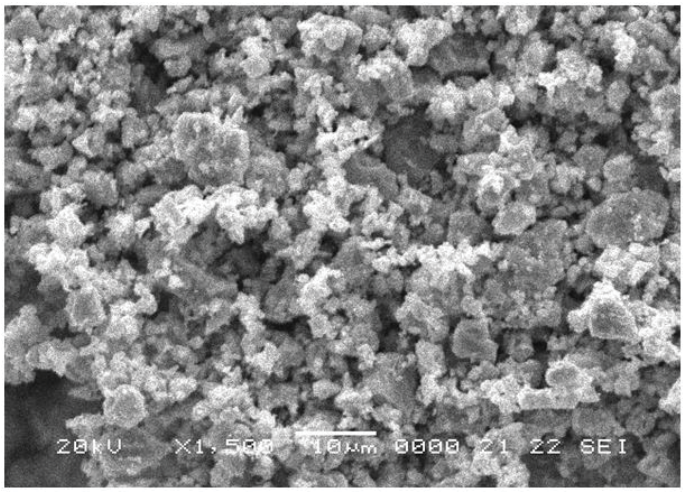

Figure 2. Scanning electron microscopy image of Calcarea carb.

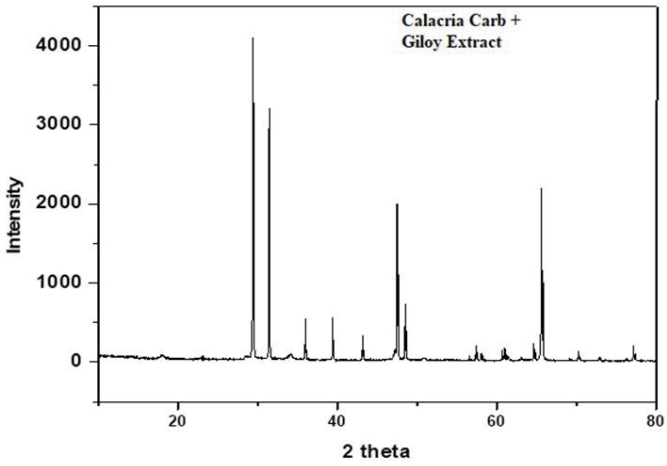

Figure 3. X-Ray diffraction patternof Calcarea carb.

and shapes. A scanning electron microscopy/energy dispersive-X-ray study shows that homoeopathic medication supported nanoscience the derived nanoparticles provides proof of Ca ions in Calcarea carbonica among the leaves of *Tinospora cordifolia* that is wealthy in Ca ions (Figure 3).

The XRD patterns of cockle shells powders fully matched with the mineral section [6]. The reflection patterns of cockle shells powders were characteristic of carbonate within the mineral section. A further influence of calcite & vaterite were found during the XRD profile analysis of nanocrystals [7]. The XRD patterns of cockle shells powder shows peaks of mixed polymorphs like calcite and aragonite or calcite, aragonite, and vaterite, demonstrating that pure crystalline mineral nanoparticles were synthesized within the presence of BS-12 that presumably acted as a biomineralization catalyst.

Conclusion

The preparation of medicine supported homoeopathic principle shows consecutive diluting initial substance is also encoded as epitaxial film on Ca rich crystals shaped nanoparticles determined in homoeopathic medicine. The structure and size of data encoded on nanoparticles would possibly disagree with degree of dilution. As homoeopathic medication shows healing properties such nanoparticles with interfacial on their surface need to transmit physiological system recognized to the affected region. Therefore totally completely different varieties of Ca are said to convey with chain of amino acids and cell of system therefore homeopathically shows proof of nanoscience in a similar way of Nano medicine system [8]. Potential confirmation needs additional analysis in material and surface water.

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