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Nano Tech Tablet: A Concept

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Introduction

Therapeutics ideally should be patient centric, with family welfare at its heart, and none should be seen as minting money. Contrarily, science translating to user application technology marches on money. This is confabulating. Socialistically, medicine need must not. This is contradicting. This fails the altruistic administrations. They end up with stiff headache and fried tempers. Maladies are associated with complex pathways; numerous cell lines; poly organs; inter-related bio physics & bio chemicals; having acute and\or chronic features; individual specific varied; drug-dose response variability; idiopathic rejection; non mono etiology; systemic; sex & age dependent; delayed action; recurrent; agro-met dependent; and with response pathologies which again usher in another domain of distinctions & contradictions; what nots! Finally, new maladies are evolving, while the old has stayed put. All these have become apparent due investment of mind & money which (interestingly) does not respect time scale. All this jointly and severally have posited as insurmountable. And, time is gold. Therefore, large investments are needed to explore ways and means to develop therapies that are multi-disciplinary; holistic; comprehensive; mild; inter-active; synergistic, yet solid, small, simple, smooth and economic. In this communication we discuss a nano tech based concept.

Even a cursory look at the history of pharmacognasy & pharmacology indicates that solid pill forms was more preferred in all ages, in all regions. Worldwide the erudite mind is (hence) kindly reconsidering alternative medicines as one of the avenues to fjord forward. Among the alternatives, phyto based formulations are being reported as 'gaining ground' (offers relative more opportunity). Now, a century of screening has proven beyond doubt that medicinal herbs offer a poly mix of compounds. And Mother Nature has endowed each herb/phyto with moieties that perform opposite roles in given conditions. This necessitates isolation, selection, fractionation, enrichment, and final use. All this on a scale range between nano-famto. The end results are often startling.

Materials and Method

Therefore, let us assume an herbal formulation 'h' as our starting material. It is comprised of 15 herbs that are historically vetted as 'safe'. Each herb may have as many as 10 therapeutic compounds (evidence based 150 moieties) for given malady 'm' that has known constant general clinical parameters of 75 types. These 150 natural compounds are isolated, harvested, purified, and packed\built up to desired volumes (rest compounds are set aside). Extracts are ultra light, high mass, low sp gravity; marked contrast in weight and yield. Nevertheless, they offer high efficacy and selective index. Thus all the 150 compounds are to be engineered by the modern drug maker as a mono pill. They shall need packing yet with separation, with (deferentially) timed sequential release. Figure 1 & 2 give the over view of the nano technology based nano medicine. Magnified 1 x 105-to-10 times.

These presents envisages use of 2 compounds for every clinical signature = Safe best. Fail safe.

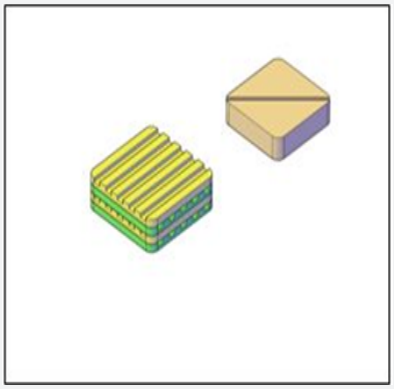

Figure 1

Large 50 to 100 micron thin starch wafers ranging between 100-200mm diameters are taken. On them using laser, spurs are etched as parallel lines or as spirals. This is the base material. From these mini wafers tablet are sized off to make pills of the order 2-5mm diameter.

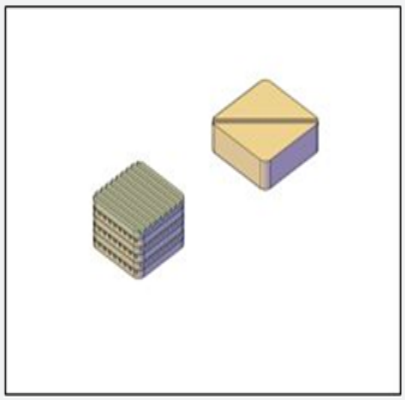

Figure 2

The room has to have a near cryo condition say between minus 20^0 - 40^0 C. Good for labile compounds. Shall assists quick freeze, post injection. Room's barometric pressure being of the order 1500hPa (normal at sea level being 970-1010hPa); low RH. The wafers lie (mechanized belt) on 1 inch thick porous metal or mica boxes that are connected to tubes that exert mild suction from the bottom via the porous bed material. This leads to fix-stick of the macro pill starch bases. 1500hPa shall prevent any Raman's effect = crisp boundary. Into the etched nano spurs mono, or admixture or non-mixtured whole, or in parts, or their extracts, or their fractions and compositions and products are severally or jointly embedded/inoculated to make natural and/or semi/partial and/or total synthetic compositions and product(s) using sterile hard ware (robot arms), as per program; at extraction temps.

Mono and/or Divalent cations and ions are used as buffer; mass maker (clatharin masses) for drug uptake and ease of driver compounds\devices\vehicles (engineered or non). De-ionized, de-mineralized, sterile water/alcohol/organic acids/tannins, etc., are used for levitation. Packed concentrates shall easily make up nano-micro volumes for ease of use by robotic machines, with never before accuracy, repeatability, GMP, etc. The mesh size and quantity of each mixables may vary for each end product, also. The possibilities are exiting.

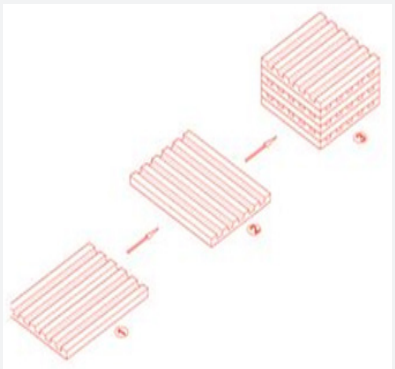

Figure 3

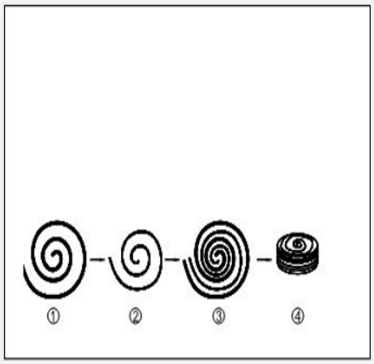

Figure 4

Candidates are embedded on molecular wt. basis, starting with lowest molecular wt. (layer after layer). This is embedment. It is alike Steganography. Can be sole, mixed, non-homogenized or homogenized~&~mixed. Wafer after wafer are piled up. Each wafer is tablet. 'n' number of tablets make a pill. Finally, an encapsulating coating is provided (hygroscopic, systemic, variedly useful as alike CaOH) and the pill is slid sealed into blisters. CaOH apart being inert, is crystalline, and permits breathing either way. Figure 3 & 4 schematically provide the wafer-tablet piled pills, of two geometric forms. Internal Architecture

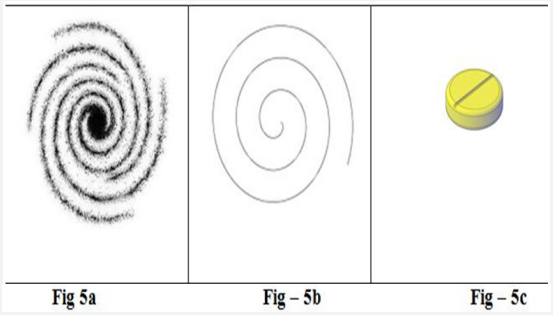

Figure 5

Architecture permits marriage of theoretical science with established technology (hardware). Additionally, Figure 5a provides the architecture of a spiral as inspired drawn (www, download, with thanks - as it suits our narration) from the observed natural phenomena of tropical cyclones. We can see that there are numerous bands that do not connect with the centre. In other words, in nature (in difference to Fibonacci i.e., Nautilus curve, Figure 5b) independent bands of various dimensions can be between the bands that connect with the centre. They are open ended. This is utilization of space (while in nature it is due to energy conservation and mobilization) alias optimization. In the domain of natural compounds inter-compound affinity is ion mediated; para-magnetic and do defy laws of gravity and or barriers. Moreover, packed compounds develop strong ion\electro static boundaries. Therefore, known ion mediation pathway failers\vectors and or novel ones can

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be inoculated in these independent (open ended) bands of the spiral. And, the spiral art form offers the best reverse drug release route (tail first); structural stability; etc. The edges shall provide better grip to the micron for a thin CaOH embalming coat Figure 5c. All these (apparently) have thus far not been considered in drug designing.

Pharmacologist view point

This is a standard size pill (not a nano pill). It uses nano tech, nano materials and forward looking concepts. It permits use of near isotopes for various health perspective. Animals have large body mass and often refuse the 2nd dose. Veterinary medicines need to be of ultra high potency. Hence there is a ready market. Some of these types can selectively be made to 'quick irrigate out' e.g., sphincter therapies yet with no deleterious effect (a type thus far not available); and or for organ; physiological process specific with assured monitorable results - apart very long lasting! Counterfeiting a nano tech based pill will be difficult. Good for QC and specially for the regulators.

Clinical view point

Clinicians can put such pills into potable water and then make the patient drink in gulps\spoon fed\pumps, over day long. This shall construe another step in individual patient centric nano medicine, least to mono dose health care (when under emergency eagle glare of clinical interventional superintendence). Else, medicaments can also be an OTC e.g., Anti-pyretics; NSAID, pediatric, geriatric, to 'feel good pills' and special as aero-space medicine; anti intoxication. There are a number of pathologies that require 'bolus' doses. Clinicians prefer 'bolous' doses in chronic infestations and infections.

Nuclear medicine Vrs nano therapy

Tumors and cancerous mass are energy efficient locuses and hence attract isotopes. Therefore, isotopes are used for image enhancement; (erroneously) referred to as nuclear medicines. Once in situ, these isotopes do not wash out easily (high specific gravity cum ion affinity; obstinate squatters). They then fail drug up-take for extended periods. Patients develop complications and heightened neoplasogenesis (cancer process enhances). Normally fatality comes sooner than later (post imaging with isotopes). Therefore, there is an urgent need for a medicament (therapy regime) that shall overcome such investigator inflicted hurdles (heightening of maladies). Quick washing out the nuclear isotopes is a crying need. For example, Fludeoxy glucose (18F) alias FDG is the most used. It is a ketone. And, ketones have the ability to efficiently synthesis i.e., re-form/transform. And any isotope is a large bank. Carcinomas produce a range of mutated biochems (oncogens). In cancers, (non alcohol) ketones posit as dangerous. They because irreversible conditions. Fluorescent sugar, the more. FDG is a sugar and can be washed out with non iodised salt (I is cholinergic and a more potent killer in cancers {than FDGs}). Pharmacologist shall have joy to use a salt isotope as the 'wash down' candidate.

Declaration: We advocate more advanced multi-disciplinary science to overcome the (mini) pit falls of the present rampant. We do not propose any revisionist theory or any anti-establishment thought. Excepting Figure 5a rest is author's own make.

Base material

I. Short, thick, wheat from semi wet regions.

II. Temperate agromet region thin-long rice have more glutone, less sugar, indicate better/more adhesion property, quick to crystalline, yet dissolves cum reconstitutes (back) entirely in water, acid and in alkalis. Gastric chamber compatible. Also do not adverse react with CaOH (coat material). On mild compression the wafers shall coalesce to seal; the furrows interlocking. These (types) may be considered as the base material to make solid bars from which wafers be sliced. The bars be compressed at 10-20kg per square inch and Gamma irradiated between 25-30 kilo gray (complete sterile). Permit a food based base material that shall permit etching of nano furrows.

Acknowledgement

This is an original, first time concept based transaction. Thanks to M/s Rhythm Architects. Special Thanks to Prof Enrica Bosisio & Team-Italy. As this author worked in the hill & dales of tropical beast and malaria infested districts of rural-remote India he gathered the ideas (Mother Nature provided inspirations towards drug discovery) as have been presented herein. It is all based on practical need and user application sciences. Thanks to the rural people. Dedicated to them. Author is unaided Gandhi school worker. No patent. Hence, this author with pleasure offers all to use seamlessly. No issues open.

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