

A REVIEW ON DOCTRINE OF SIGNATURESWITH SPECIAL REFERENCE TO SAMANYA-VISHESHA SIDDHANTHA

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ABSTRACT

The Doctrine of Signatures is a theory which has been a treasure to mankind which was believed and practiced by many herbalists since centuries. The doctrine states that the plants that resemble various parts of the body cure the ailments of those body parts. This theory has been explored by many scholars since time immemorial, which have been found to be true. Here is an effort to review and present the concept *Samanya-vishesha siddhantha* i.e. the concept of like cures like as told in Ayurveda and to compare with doctrine of signatures.

KEYWORDS: Doctrine of signatures, *Samanya-vishesha siddhantha*

INTRODUCTION

Fundamental aspects of all life sciences developed since ages describe observed facts and their co-relation with the living bodies. This includes comparative similarities and dissimilarities between universe and mankind. The theory which says like increases like happens to be basic way of interpreting efficacy of food and medicine on human body. Such theories are evolved by remaining in close vicinity with nature for prolonged duration. *Samanya-vishesha siddhantha*^[1] is the most fundamental aspect of *Ayurvedic* Style of managing ailments with the help of appropriate *Dravya* or substance appropriate to the circumstances. Such practices include usage of materials having similarity or dissimilarity with respect to appearance, quality or functions observed outside human body hence they are called

Dravya samanya, *Guna samanya*, *Karma samanya* respectively and vice-versa.

Similarity with the appearance has been attributed as doctrine of signatures which is evolved through persistent observations with respect to their influence on human body. The doctrine of signatures states that “the herbs with similarity in shape or color to various parts of the body treat ailments of these parts of the body.” The hints given by certain characteristics of plants are very much distinct. Variety of aspects like habitat, color, shape, texture, odor, and their characteristic features have been covered in this article. *Guna samanya* covers habitat, color and odor and texture signatures whereas *karma samanya* covers other signatures like growth and development.

Guna samanya: Qualities like color, shape are called as *Guna*. Plants having similarity

in shape and external appearance of a plant is the major source of signatures. Herbs having similar shape or texture to various parts of the body are said to heal the diseases of those parts. Shape and morphological signatures is the core of the doctrine of signatures and resemblance of a plant part to a human organ indicated medicinal relationship.

1. **Carrots:** Carrot (*Daucus carota* L.) belongs to Apiaceae Family, is a root vegetable, which is cultivated throughout world. Carrot has been ranked 10th for its nutritional value among 39 fruits and vegetables^[2]. The use of carrots dates back to the 10th century which was found to be recorded in an Old English Herbarium indicating its use as an emmenagogue as well as in the treatment for smallpox and cough^[3]. The colors of carrots reveal their various concentrations of phytochemicals^[4]. Orange carrots are rich in α - and β -carotene and are a rich source of pro-vitamin A^[5], yellow carrots have zeaxanthin and lutein^[6], red carrots have lycopene content^[6] whereas purple carrots contain anthocyanins^[7]. Beta-carotene of carrot is converted into vitamin A which is a powerful antioxidant, protecting the body from free radicals and helps in the maintenance of a healthy skin and eyes^[8]. A sliced carrot resembles human eye, the pupil, iris and radiating lines look just like the human eye (Figure 1). β -Carotene, a carotenoid found in carrot with pro-vitamin A activity found in carrots has significant anti-oxidant activity. β -Carotene protects vision, especially night vision and also provides protection against macular degeneration and development of senile cataract, the leading cause of blindness in

old aged^[9] ^[10]. Hence it is evident that carrots which look alike human eyes are beneficial for their health.

2. **Ginger:** Ginger (*Zingiber officinale*) belongs to Zingiberaceae, is a rhizome species having a long history of medicinal use for more than 2000 years as one of the most versatile medicinal plants having a wide range of biological activities and a common condiment for various foods and beverages.

The volatile oil of ginger consists mainly of the mono- and sesquiterpenes, camphene, β -phellandrene, curcumene, cineole, geranyl acetate, terphineol, terpenes, borneol, geraniol, limonene, zingiberol, linalool, α -zingiberene, β -sesquiphellandrene, β -bisabolene, zingiberenol and α farnesene^[11, 12]. Zingiberol is the important aroma contributing component of ginger rhizome^[13]. Whereas non-volatile pungent components include the gingerols, shogaols, paradols and zingerone that produce a 'hot' sensation in the mouth. Gingerols are identified as the major active components in the fresh rhizome. The pungency of dry ginger results from shogaols, which are dehydrated forms of gingerols^[14].

Rhizome of ginger (both dry and fresh) resembles the stomach (Fig 2) and hence it is believed to be helpful in diseases of stomach and is reported to stimulate digestion, absorption, relieve constipation and flatulence by increasing muscular activity in the digestive tract. A study revealed that ginger oil has a protective action against gastric ulcers induced by aspirin plus pylorus ligation in Wistar rats

^[15]. Many studies have revealed the Gastro-protective property of ginger which proves its signature to be true.

3. **Grapes:** Grapes (*Vitis vinifera*) belongs to Vitaceae, are one of the most widely consumed fruits worldwide in both fresh and dry form. Grape seeds contain proteins (11%), fiber (35%), minerals (3%), and water (7%) ^[16]. Pro-anthocyanidins are the major compound in grape seed extracts ^[17]. Pro-anthocyanidins have exhibited a strong antioxidant activity and scavenge reactive oxygen and nitrogen species, modulate immune function and platelet activation, and produce vaso-relaxation by inducing nitric oxide release from endothelium ^[18]. Pro-anthocyanidins inhibits the progression of atherosclerosis and prevents the increase of low-density lipoprotein (LDL) cholesterol concentration ^[19].

Grape is a berry, many berries make up a cluster or bunch of grapes. Our lungs are made up of branches of ever-smaller airways that finish up with tiny bunches of tissue called alveoli. These structures, which resemble bunches of Grapes (Fig 3). A study has demonstrated the Anti-allergic, anti-anaphylactic & mast cell stabilizing potential of ethanolic extracts grapes in asthma experimentally ^[20].

4. **Tomato:** Tomatoes (*Solanum lycopersicum* L) belongs to Solanaceae family, one of the most versatile vegetables with Indian culinary tradition usage. The tomato is considered as “culinary vegetable” because it has much lower sugar content than culinary fruits. Tomato is a rich source of lycopene, beta-

carotene, potassium, vitamin C, flavonoids and vitamin E ^[21, 22].

Fresh sliced tomatoes resemble the heart and its chambers (Fig 4) which are believed to be a cardio-protective drug by virtue of its signature. Tomatoes fresh or processed have been found to provide a cardio protective effect, both at the endothelial and platelet levels ^[23].

A study concluded that extracts of ripe tomato fruits inhibit platelet function with a potent preventive effect on thrombus formation which may be supportive in the primary prevention of CVD ^[24]. Studies have demonstrated that lycopene protects LDL from oxidation and can suppress cholesterol synthesis which promotes heart's health by preventing from the risk of cardiovascular diseases like atherosclerosis ^[25]. A study identified that adenosine is one more important bioactive compound of tomatoes that complements the anti-platelet activity of the lycopene ^[26]. Hence; tomatoes are considered to possess cardio-protective activity.

5. **Apricot:** *Juglans regia* belongs to Juglandaceae family. Also termed as walnuts are highly valued for their delicate taste and high nutritional value. Recently, walnuts have gained importance; they have attention for their health benefits, which have been reported to improve lifestyle diseases. Walnuts have unsaturated fatty acids, vitamin E, fiber, magnesium, potassium ^[27] and enriched with omega-6 and omega-3 polyunsaturated fatty acids (PUFA), which are essential dietary fatty acids ^[28]. Walnuts represent the 7th largest source of total polyphenols among common foods and beverages which include

Pedunculagin, Ellagic acid, Tellimagrandin I, Casuarictin, Tellimagranin II, Rugosin C and Casuarinin^[29].

A walnut fruit resembles a little brain with left and right hemisphere, upper cerebrums and lower cerebellums (Fig 5). Even the wrinkles on the nut are just like the neo-cortex of the brain and hence it is considered as the brain nutrient.

A number of studies have proven to possess significant protective effect of nuts against depression, mild cognitive disorders, Alzheimer's disease^[30] and depression as well^[31,32]. Several clinical trials have been conducted on this regard, one of them concluded that walnut supplementation was able to improve mood in healthy, non-depressed males which suggests that walnuts have direct action on speed of signal transduction, and modulation of serotonin and dopamine concentrations^{[33][34]}.

6. Centella: *Centella asiatica* is an important herb in Ayurveda, known as *Mandukaparni* and Indian pennywort, found in most tropical and subtropical countries growing in swampy areas, including parts of India, Pakistan, Sri Lanka, Madagascar, and South Africa and South pacific and Eastern Europe. Centella has triterpenoid saponins, including asiaticoside, centelloside, madecassoside, and asiatic acid. In addition, Centella contains other components, including volatile oils, flavonoids, tannins, phytosterols, amino acids, and sugars^[35].

The leaves of centella resemble brain (Fig 7) and are believed to be acting on brain and promoting memory. Aqueous extracts of the herb showed significant effects on learning and memory and decreased the levels of nor-epinephrine, dopamine and

5-HT and their metabolites in the brain^[36]. A study concluded that Centella has anxiolytic activity in humans^[37] and improves age-related decline in cognitive function and mood disorder in the healthy elderly^[38]. Thus, Centella herb is useful in brain function.

7. Cissus: *Cissus quadrangularis* Linn. is a succulent plant commonly found throughout tropical parts of India. Commonly known as the 'Bone Setter' the plant is referred to as 'Hadjod' in Hindi because of its utility in bone fractures. Carotenoids, Triterpenoids and Ascorbic acid^[39] and the plant also produces the resveratrol dimer quadrangularin-A^[40].

The stem of *Cissus* resembles the joints (Fig 8) and is widely used in bone disorders. Ethanol extracts of plant possess anti-osteoporotic activity^[41], enhances the development of cortical bone and trabeculae in fetal femur, which may be due to rich content of calcium, phosphorous and Phyto-estrogenic steroids and shown to influence early regeneration and quick mineralization of bone fracture healing process^[42].

Cissus acts by stimulating metabolism and increasing the uptake of minerals, calcium, sulphur and strontium by the osteoblasts in fracture healing^[43,44]. Hence, *Cissus* proves to be a potent drug against bone and joint disorders.

8. Momordica: *Momordica charantia* (Bitter Melon) is also known as balsam pear or Karela and it is a tropical vegetable used is a common food in Indian cuisine and has been used extensively in folk medicine as a remedy for diabetes. Fruit of

Momordica resembles Pancreas (Fig 9). The fruit has shown the ability to enhance cells uptake of glucose, to promote insulin release, and to potentiate the effect of insulin^[45].

M. charantia fruit juice acts like insulin to exert its anti-hyperglycemic effect and moreover, stimulates amino acid uptake into skeletal muscle cells just like insulin does. Some studies have concluded that *M. charantia* juice and its extract can stimulate peripheral glucose uptake and moreover, regulate the amount of glucose taken up by the gut^[46]. These results highlight beneficial use of *M. charantia* in the treatment of diabetes mellitus.

9. Mucuna: *Mucuna pruriens* Linn. belongs to the family *Fabaceae* is called as velvet bean, the young foliage and the seed pods of this plant produce extreme itchiness on contact. *Mucuna* seeds resemble the human testicles because of which considered as aphrodisiac in males. *M. pruriens* seeds contain high concentrations of L-DOPA- a non protein amino acid and a direct precursor to the neurotransmitter dopamine, an important brain chemical involved in mood, sexuality and movement^[47]. A study demonstrated that oral administration of *Mucuna* seed powder once in a day for men with decreased sperm count and motility reduced psychological stress and seminal plasma liquid peroxide levels with improved sperm count and motility and helps in the management of stress and improves semen quality^[48]. Hence it is evident that *Mucuna* is helpful in promoting fertility of men.

10. Cassia tora: *Cassia tora* belongs to *Fabaceae* family is a small shrub which grows. It is known by different names in different places like wise Sickie Senna, Wild Senna, Sickie Pod, Coffee Pod, Tovar, Chakvad, and Ring-worm Plant. The leaf of this plant resembles ring worm infestation (Fig 11) and is extensively used for the management of the same. A compound (Chrysophanic acid-9-anthrone) isolated from an aqueous paste of the powder exhibited Antifungal activity^[49].

Habitat signatures:

Habitat is an environment where animal/plant species exist. Most of the times, the habitat of a plant symbolizes the medicinal use of the plants grown in a particular habitat. Here are few examples.

1. Plant species growing near water bodies / water-logged places would cure burns, control fever and also act as cooling agents

Eg: *Cyperus rotundus* (*Mustha*)

A study conducted using alcoholic extract showed highly significant antipyretic activity against pyrexia induced albino rats. Petroleum ether extract was found to possess a significant antipyretic effect similar to acetyl salicylic acid when used on the same animal model^[50].

2. Plant species that grow in sandy soil or soil mixed with gravels are useful in the treatment of kidney-stones

Eg: *Tribulus terrestris* (*Laghu Gokshura*)

Experimental studies carried out on *Tribulus terrestris* shown to dissolve uric acid and cystine calculi in an in vitro model^[51].

Color signatures:

The color of the plant's flower, fruit, or decoction from root or stem may also be a

signature. The color may be seen in any part of the plant, not just the flower, fruit, or decoction, but it is less often seen in the leaves and stems.

Few illustrations:

1. In Western herbalism the color yellow is associated with the bile, hence with the liver and gallbladder. Yellow flowers, latex and dyes are remedial to treat jaundice

Eg: *Curcuma longa* (Turmeric)

Curcumin was found to decrease serum AST and ALT activity, and free fatty acid, cholesterol and phospho-lipid levels^[52]. In a study with cultures of human hepatocytes, curcumin showed to be nearly ten times more effective than the regular treatment^[53]. Turmeric is known to have a hepato-protective characteristic similar to silymarin. Studies have demonstrated turmeric's hepato-protective properties from a variety of hepatotoxic injuries^[54].

2. Red color of fruits flowers and plants suggests their medicinal utility for blood diseases, sun-stroke and burns.

Eg: *Rubia cordifolia* (Manjishta)

Rubia cordifolia was screened for their antityrosinase activity (to treat hyperpigmentation which can be used as skin lighteners)^[55]

Odour signatures:

The ancients believed that strong-smelling plants would drive away evil spirits. Smells of certain plants give signature of activities related to the smell of that drug. Eg: *Ashwagandha* (*Withania somnifera*): The name *Ashwagandha* is from the Sanskrit language and is a combination of the word *Ashwa*, meaning horse, and *Gandha*, meaning smell. The root has a strong aroma that is described as "horse-like." Horse is

believed to symbolize power and virility. Hence it has been in use for its aphrodisiac activity since ages. Methanolic root extract of *Withania* It showed significant effect on sexual behaviour of rats.^[56]

DISCUSSION

Pranaishana (Struggle for existence) is one of the accepted theory of evolution, which holds good for all living beings including human beings. Pre and post civilization of human era on this earth is marked with sustained and continuous struggles for food and other necessities of survival. Diseases posed enormous threat during ancient times of human existence and human evolution is marked with survival of fittest. Inquisitive mind of people living in those days perhaps tried to analyze the facts, which they observed in their surroundings. It is said that, remedy for our problems are hidden within the nature and hence need careful examination of natural products. People tried to mimic other animals and birds during early days of evolution, which new various techniques of survival including food and medication. These efforts perhaps lead to the use of different natural products incidentally or accidentally. Incidental searches probably included doctrine of signatures, which were based on similarity to body parts either by appearance or other qualities such as color, odor and habitat. Such correlations and resultant efforts to find remedies had enabled human beings to attain supremacy among entire animal kingdom. Many such references are available about usage of similar looking natural products during historical period. An example such as using prop roots of banyan

tree (resembling long hair of women) was used as hair growth promoter.

Thus the good old theory of Ayurveda i.e. *Samanya- vishesha siddhantha* was framed and documented in ancient texts, which became a primary principle of treatment. Many of the present day researches in the field of phyto-medicines are based on Ethno-botany and Ethno-pharmacology, both of which are traditional practices and most of them contain observational findings including doctrine of signature. Development of science and technology enabled us to track the reasons for activities of such signatures through Reverse pharmacology. Advances in present day science and technology have enabled us to evaluate such findings in sophisticated manner due to which we are position to answer certain questions through phyto-chemical profile of natural products described in this article such as Beta carotene of Carrot, Zingiberone of Ginger, Pro-anthocyanidine from Grapes, Lycopene of Tomato, Omega 3 Fatty acids of Walnut, Asiaticoside of *Centella asiatica*, Phyto-estrogenic acids of *Cissus quadrangularis*, Bitter principles of *Momordia charantia*, L-Dopa of *Mucuna prurita* and Anti-fungal principles of *Cassia tora*.

Despite knowing so many signatures, several secrets are still un-explored. There are many untouched lands and natural precuts, which might consist such secrets. A matter of caution is also thought of before using objects resembling human body parts. It's often risky to use anything and everything both as food and medicine as it may contain toxic compounds and need thorough analysis.

CONCLUSION

Knowledge about Doctrine of signature which is revalidated through modern parameters is of therapeutic importance in present condition. Hence, the same principle upholds Ayurvedic concept known as *Samanya-vishesha siddhantha*, which remained as primary objective of treatment. Few more natural products need to be added to pharmacopeia after thorough analysis.

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Images showing the doctrines

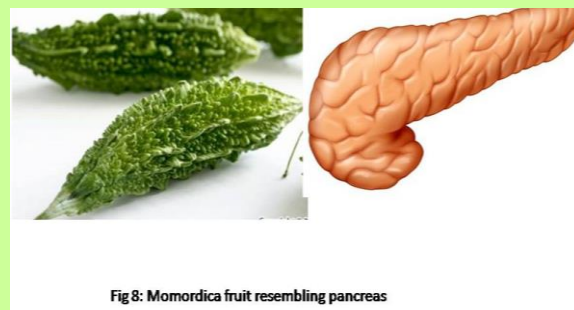
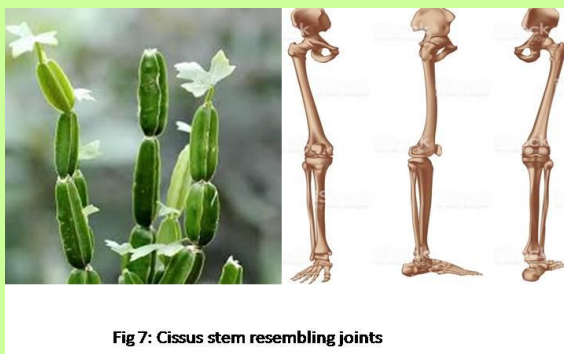
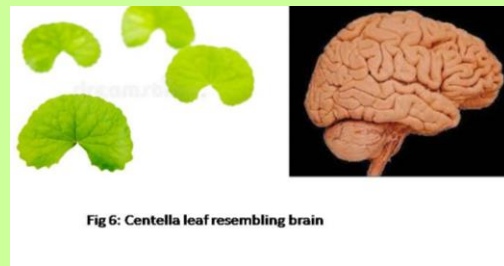
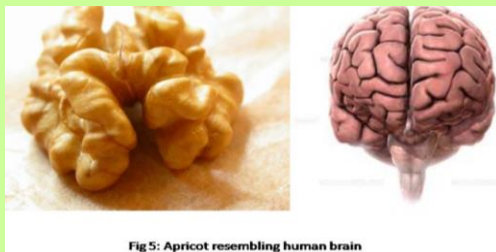
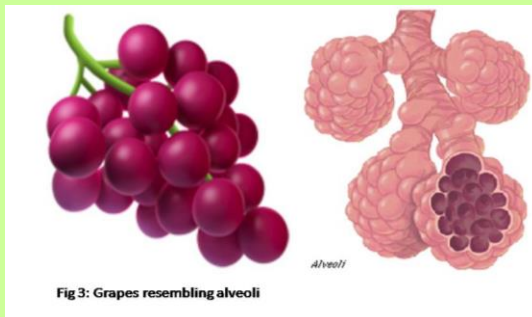
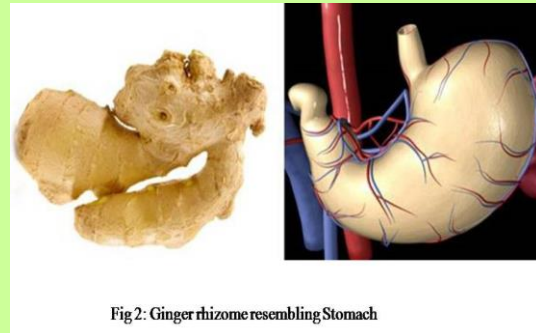
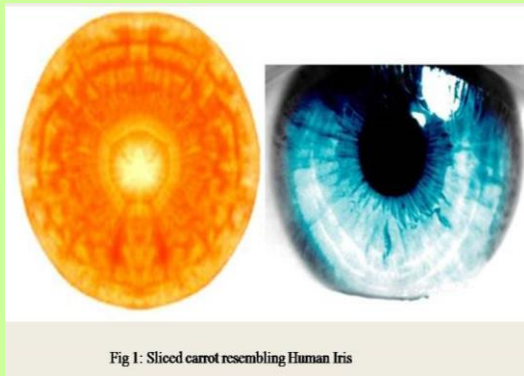




Fig 9: Mucuna seeds resembling testicle



Fig 10: Cassia tora leaf resembling ringworm