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# Garlic in Traditional Indian Medicine (Ayurveda) for Health and Healing

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## Abstract

Traditional Indian Medicine (TIM)- Ayurveda is a Sanskrit Language word, which signifies “true knowledge of life”. It is recognized as one of the oldest Traditional health care systems of the World by World Health Organization. In fact, it was a main stream health care system till the introduction of convention medicine in India. Plant, animal and mineral origin natural substances are used in Ayurveda for health and healing. Of them, Garlic is one of the plant origin substances. Garlic is known as *Lasuna*, which signifies, destroyer of diseases. The fresh plants of Garlic are used as edible food substance and also the dried cloves are on ripening to alleviate the disorders rationally in TIM. Garlic is recommended as physical strength promoting, intellect promoting and as aphrodisiac to maintain healthy state of life. Its properties like- unctuous, hot, pungent, heavy has been described to alleviates skin diseases, intra abdominal tumor, chronic rhinitis, hemicranias, epilepsy, fainting etc. Its continuous use causes internal hemorrhage. The medicated milk, medicated oil preparation are used orally as well topically. A number of pharmaceutical forms are seen in more than 3000 years old original scriptures of Ayurveda and also in later works as it was in use by successive generation in India. A comprehensive review on Garlic is highlighted here, including original references with scientific evidences.

**Keywords:** Ayurveda, Traditional Indian Medicine, Plant, Animal, Mineral, Lasuna, Rasona, Garlic, Health, Healing

## 1. Introduction

According to World Health Organization (WHO), Traditional Medicine (TM) is a comprehensive term used to refer both to Traditional Medicine such as traditional Chinese Medicine, Indian Ayurvedic and Arabic Unani Medicine and Various forms of Indigenous medicine. Traditional medicine therapies include medication therapies-if they involve use of herbal medicines, animal parts and minerals-and non-medication therapies- if they are carried out primarily without the use of the medications, as in the case of acupuncture, manual therapies and the spiritual therapies. In countries where dominant health care system is based on allopathic medicine, or where TM has not been incorporated into the national health care system, TM is often termed, “complementary”, alternative or non-conventional medicine (WHO, 2002) [1].

Across the world, TM is either as the mainstay of health care delivery or serves as a complement to it. The World Health Assembly (WHA) resolution on TM (WHA 62.13), adopted in 2009, requested the Director-General of World Health Organization (WHO) to update the WHO Traditional medicine strategy 2002–2005, based on countries' progress and current new challenges in the field of traditional medicine. The WHO Traditional Medicine Strategy 2014–2023 thus reappraises and builds on the WHO Traditional Medicine Strategy 2002–2005, and sets out the course for TM and CM (T&CM) in the next decade (WHO, 2013) [2].

Since ancient times, the Traditional Indian Medicine- Ayurveda is a main stream in health care system since ancient times based on use of natural origin substances available on earth. In Charaka Samhita three origins of medicinal substances has been defined- तत् पुनस्त्रविधिं प्रोक्तं जङ्गमौद्भदिपार्थविम् which are as follows [3–5];

**Sthavara (immobile)**, which includes- (i) *Vanaspati* (those with fruits and invisible flowers), (ii) *Vraksha* (those having both flower and fruits), (iii) *Virudh* (weak plant and shrub) and (iv) *Osadhi* (which perishes on maturing of fruits). Further, the vegetable parts used as drug are also described in both the texts, which constitutes; *mula* (root), *tvak* (bark), *niryasa* (exudate), *nala* (hollow stalk), *svarasa* (juice), *pallava* (young leaf), *kshara* (alkali) *kshira* (latex), *phala* (fruit), *pushpa* (flower), *bhasma* (ash), *taila* (oil), *kantaka* (thorn), *patra* (leaf), *sung* (flowering bud), *kanda* (rhizome/tuber/corm), *praroha* (aerial shoots) etc.

**Jangama (mobile)**, which includes- (i) *Jarayuja* (all placental bearing- animals, human beings etc.), (ii) *Andaja* (all egg bearing- birds, snakes, reptiles etc.), (iii) *Svedaja* (origin from sweating/humidity/dampness- microorganism, insects, worms etc.) and (iv) *Udbhija* (emerge out from earth- *Indragopa*, *manduka* (frog) etc. Further, *danta* (tooth/tusk), *asthi* (bone), *mutra* (urine), *purisa* (faeces), *khura* (hoof), *tunda* (beak), *loma* (hair), *nakha* (nail), *charma* (skin), *paksha* (wings), *pitta* (bile), *vrana* (testicles), *antra* (intestine), *rakta* (blood), *yakrita* (Liver), *sringa* (horn), *mamsa* (flesh) etc.

**Parthiva (Earth origin)**, which includes- *suvarna* (gold), *rajata* (silver), *mani* (gems), *mukta* (pearls), *manahshila* (realgar), *mritakapala* (earthen piece) *anjana* (galena), *kanchanagairika* (red ochre), *kasisa* (ferrous sulphate), *kamksi* (alum), *Kamsya* (bronze), *ayas* (iron), *tamra* (copper), *tuttha* (copper sulphate), *puspakasya* (purified ferrous sulphate), *riti* (brass), *lohamala* (iron by-product), *vajra* (diamond), *vaidurya* (Cat's eye), *vida* (ammonium chloride), *silajatu* (black bitumen), *sisa* (lead), *sudha* (lime), *suvarnamakshika* (Copper pyrite), *suvarchika*, *sphatika* (Rock-crystal), *harital/ala* (Orpiment) etc. under this group.

Those substances are actually used rationally in Ayurveda not empirically. The Principle and Practice of Ayurveda has its emergence from ancient Vedic period i.e. 3000–1500 before Christ Era (BCE). The Indian seers of ancient age observe the nature and their surroundings and evolved certain basic principles in accordance with the prevailing Laws of the nature- *Soma* (Lunar), *Surya* (Solar) and *Anal* (Air), which influences life of every individual in the universe. According to them, the creation of Ayurveda is for the wellness of all living being. They further emphasize on two objective of the Ayurveda- (i) *svasthasya svastha rakshanam* (protection of health of a healthy individual and (ii) *aturasya vikaraprasamanam* (alleviation of disorder in a diseased person). It is worthy to mention here that the definition of Health is told in one of original scriptures of Ayurveda- Sushruta Samhita(SS) coincide with WHO definition of Health as follows; “a state of physical, mental and social well-being and not merely the absence of disease or infirmity [6]. In SS the definition of Health is seen as follows:

समदोषः समाग्नश्च समधातु मलःकरयिः।  
प्रसन्नात्मेन्द्रियमनः स्वस्थइतिभिधीयते॥

One whose *doshas*, *agni* and function of *dhatu* and *malas* are in the state of equilibrium and who has cheerful mind, intellect and sense organs is treated as 'svastha' (healthy) [7]. This definition is very near to definition of Health by WHO.

## 2. Evidence of use of similar vedic plants in original scriptures of tim

The evidence of use of natural substance as medicine in India has its foot-print in more than 5000 years old compendium i.e., *Rigveda* (3000 BCE) a compendium of knowledge (*Veda*) of ancient origin. The *Osadhi-sukta* (well saying on drug) of *Rigveda* is the foremost authoritative document of the knowledge about plants in that age. It says that plant came in existence much earlier from the Gods and has innumerable places of origin and habitat. They have potency like horse and they conquer diseases in the patient on circulating all over the body. Plants were used to make man (*dvipad*- two leg) and animals (*chatuspad*- four leg) free from disease. Atharvaveda (1500 BCE) mention quite a large number of the plants and other substances used as medicine [8].

On comprehensive review of the Vedic compendia, it is observed that a good numbers of plants with their similar name and uses are find places in CS and SS. A few of them are as follows; Asvattha (*Ficus religiosa* L.) is said king of trees in Aitareya Brahamana and its fruit popularly known as, 'Pippala'. The versatile commentator of Vedic compendia- Sayana, interprets 'pippala' as 'palaka phala' (life sustaining fruit) [9]. In CS- *Asvattha* find place by the same name and its phala (fruit) and *patra* (leaf) are used. The *phala* (fruit) is enumerated among fruit group [10]. In SS also, *Asvattha-phalamulatvakasunga* (fruit-root-bark-terminal part of leaf) are used. Its fruit is said as *Vajikarana* (aphrodisiac) [11]. Another plant- *Sigru*, denotes a geographical region but in later text; Kausika Sutra, it has appeared as a plant and prescribed its application in worms [12]. In 27th chapter of CS, *Sigru* is enumerated with other drugs i.e., **yavani** (*Trachyspermum ammi* (L.) Sprague, **arjaka** (*Orthosiphon pallidus* Royle ex Benth) etc. are used freshly as adjuvant in the preparation of food items. Here, **Garlic** (*Lasuna*) is also find place in green vegetable group [13].

The observational experience on effect of plant initially on animals and thereafter in Human beings led to the genesis of science of Life- Ayurveda (Traditional Indian Medicine) during ancient India. The three natural origin substances i.e., *Audbhid* (plant), *Jangam* (animal), *Parthiva* (mineral) are used to prepare single and compounds drugs from them. On the other side former two are used as food substances. Ayurveda advocate that rational use of wholesome substance(s) by an individual in accordance with season and geographical region makes healthy long life, whereas unwholesome causes various disorders. Ayurveda is known as sub-division of Atharvaveda as honestly written in Charaka Samhita (CS) [14] and Sushruta Samhita (SS) the Original scriptures of Ayurveda- *Vedo hi Atharvanohya* [15]. It is worthy to mention here that many of the medicinal substances used in Vedic compendia are referred in original scriptures of Ayurveda with similar name and uses.

## 3. Ancient origin of ayurveda (aoa)

CS and SS are very well known as the original scriptures of TIM with their Vedic tradition, they are considered contemporary to each other as both were created during 1000 BCE. The available scriptures are written in Sanskrit language, which was the language of vocabulary, writing and teaching during that period. Thus,

it is obvious that the complete writing is available in Sanskrit. The CS is the text of Internal Medicine and SS is Surgical Care of Disease a part from medical care. The entire work is presented in question-answer style by Master and Disciple. The contents of the text have been arranged in eight sections and 120 chapters in case of CS and the eight sections are comprising of; basic concepts, diagnosis, specific features, human body, fatal sign & symptoms, treatment, pharmaceutical and successful management [16]. Similarly, the SS, consisted of six chapters and 188 sections as follows; basic concepts, diagnosis, human body, treatment, pharmaceuticals and Uttartantra (deals with-diseases above the neck, pediatrics and internal medicine [16, 17].

On review, one can easily visualize the method of preparation of sizable number of compound formulations too, which are even purchased over the counter for health benefits. A few of the popular compound formulations, which are even today in common practice in Ayurveda are; *Triphala Rasayana churna*, *Trikatu Churna* and *Chyavanprasha Avaleha* [18].

#### 4. Evidence of first use of Garlic-*Lasuna* in india

The use of Garlic in India dates back to more than 3000 years as evident from CS and SS the original available scriptures on Ayurveda in Sanskrit Language. In both the texts “Garlic” is known by the name of *Lasuna* and also by its synonym



**Figure 1.**  
*Plant of Fresh Garlic.*



**Figure 2.**  
*Mature Garlic Bulb.*

*Rasona*. On complete review of both the texts, it was observed in CS that the fresh garlic is placed in *harit varga* (green group) with other edible plant substances and consumed as food article [19, 20]. The green garlic is consumed while immature and still tender and a bulb not separated into cloves like a mature ones, whereas cloves are used when it is matured. Not only in Pan India but in the neighboring areas like; Nepal, Myanmar, Lao, Pakistan, Bangladesh, Bhutan, Sri Lanka (South-East Asian region) similar uses are reported. Thus, it is obvious that in Pan India, Garlic is in use since ancient times (Figures 1 and 2).

## 5. Use of Garlic-Lasuna for health and healing in CS and SS

### 5.1 Garlic-Lasuna for health in CS and SS

The Health benefits of Garlic- *Lasuna* are very much witness in ancient texts viz., CS and SS, which is based on the properties of the *Lasuna* (Garlic) like; *snigdha* (unctuous), *usna* (hot), *katu* (pungent), *guru* (heavy). and *snigdha* (unctuous), *usna* (hot), *tikshna* (sharp), *katu* (pungent), *picchila* (slimy), *guru* (heavy), *sara* (laxative), *svadurasa* (sweet) respectively. Of them, due to unctuous and slimy properties it has *vrishya* effect (promotion of 7th *Dhatu- sukra*), which is responsible for the quality formation of sperm cells and thereby *oja* (vital essence) with the result of that enhances body immunity to fight against disorders. Those properties are enhanced, if it is consumed either with milk, and/ or butter or clarified butter, thus in general it has health benefits. With clarified butter- it minimizes adverse effect owing to the properties like; hot, sharp and pungent. In SS it is considered beneficial to eye and advised for physical and mental strength promotion. It has *balya* (strengthening), *vrishya* (aphrodisiac) effects and promotes- *medha* (intellect), *svara* (voice), *varna* (complexion), *chakshu* (vision), and *bhagnasthi sandhana* (union of fractured bone) as recorded in SS [21, 22].

### 5.2 Garlic-Lasuna for healing in CS and SS

The Garlic-*Lasuna* has been prescribed to alleviates *krimi* (worms), *kustha* (dermatopathies), *kilasa* (leucoderma), *vata* (one of the three vitiated elements) and *gulma* (intra abdominal tumour), *Gaurava* (head in heaviness), *Siras sula* (headache), *Pinasa* (chronic rhinitis), *ardhavabhedaka* (hemicrania), *krimiviyadhi* (helminthiasis), *apasmara* (epilepsy), *ghrananasa* (anosmia) and *pramoha* (fainting) through nasal route of administration.

In *Vimanasthana*, *Lasuna* is included among the drugs for non-unctuous medicated enema for intestinal worms. This medicated enema is said to be administered for three or five days continuously. In the next chapter *Lasuna* is enumerated in *katuskandha* (pungent-group) and medicated enema is prepared, which is prescribed along with *madhu* (honey), *taila* (oil) and *Lavana* (salt) in *slesma* (one of the three bio-elements) origin disorders. In the same chapter the useful part of *Lasuna-kanda* (garlic-tuber) for *sirovirechana* (head-evacuation- one of the procedures of Panchakarma (Five measures- *vamana-virechana-anuvasana-asthapana* and *sirovirechana*) has been included with other drugs in a group. The *kshira-paka* (medicated- milk) prepared of *suddha-suska Lasuna* (clean-dried garlic) in definite ratio of *lasuna* (garlic): *udaka* (water): *Kshira* (milk) cures *vatajagulma* (intra-abdominal tumor due to *vata*-vitiating), *udavarta* (upward movement of *Vayu*-), *gridhrasi* (sciatica), *visamajvara* (irregular-fever), *hridayaroga* (cardiac-diseases), *vidradhi* (abscess) and *sotha* (inflammation). The Oral administration of *Rasona* (Garlic) paste with sesame oil before meals is prescribed to alleviate the intermittent fever.

Garlic is one of the ingredients of the *Kanakakshiri taila* (medicated oil preparation) prescribed as topical massage to alleviate worms and itching. In 9th chapter, two kinds of clarified butter based Garlic formulations are seen for *Unmada* (insanity) and *Apasmara* (epilepsy) and in both the preparations, Garlic is found as the major ingredient. Fumigation of Garlic with other plant drugs is recommended to alleviate *apasmara* (epilepsy) [23].

In SS Sutrasthana 39 chapter, *Lasuna-kanda* (garlic-bulb) is found with *alarka*, *ativisa*, *sringavera* for *sirovirechana* (head evacuation). It is included with other *katu* (pungent) drugs in *katu*-group (pungent group) and in *saka varga* (vegetable group) with other vegetables and its properties like; *snigdha* (unctuous), *usna* (hot), *tikshna* (sharp), *katu* (pungent), *picchala* (slimy), *guru* (heavy), *sara* (laxative), *svadurasa* (sweet) has been enumerated. It alleviates; *hridayaroga* (cardiac disease), *jirna-jvara* (chronic fever), *kukshi-sula* (abdominal colic), *vibandha* (constipation), *gulma* (intra-abdominal tumour), *aruchi* (anorexia), *kasa* (cough), *sopha* (oedema), *durnama* (piles) *kustha* (dermatopathies), *anala-sada* (agni deficiency), *jantu* (worms), *samira* (vata), *svasa* (dyspnoea) and *kapha*. Here, the drug *Lasuna* and its synonym, “*Rasona*” is seen first time in SS. In case of insufficient milk production in lactating mother due to *krodha* (anger), *soka* (sorrow), *avatsalya* (loss of affection to baby) it is recommended as galactagogue. At the time of labor pain to remove the hardness of bowel, milk preparation of garlic with hingu, *sauvarchala* and *vacha* is recommended. In combination with other plant and mineral origin substances, it is recommended in eye diseases as *anjana* (anointment) and to pacify; *kandu* (itching), *timira* (diminished vision), *suklarma* (pterygium), *raktaraji* of the eye (redness of the eye). In ear diseases Garlic with other drugs in compound form of oil and clarified-butter preparations is recommended. The lukewarm oil, prepared with the juice of garlic is recommended as wholesome to earache, head evacuation and in intermittent fever in *ghrita* (clarified butter) form. At other place the milk preparation of Garlic (*Rasona*) is recommended to *Kshayaartha* (patient of tuberculosis). The juice of Garlic (*Rasona*) as major ingredient with other drugs in Clarified butter form is recommended to alleviate; *gulma* (intra-abdominal lump), *grahani* (duodenal disorder), *arsa* (hemorrhoids), *svasa* (dyspnoea), *unmada* (insanity), *kshaya* (tuberculosis), *Jvara* (fever), *kasa* (cough), *apasmara* (epilepsy), *mandagni* (loss of appetite), *pliha* (splenomegaly), *vatika-sula* (colic). In Uttaratanttra of Sushruta Samhita, two compound formulations comprising of Garlic with other Drugs has been recommended as collyrium (externally) and oil in psychiatric disorders. In successive chapter, a compound of Garlic with other drugs in *apasmara* (epilepsy) [24].

## 6. Use of Garlic-*Lasuna* for health and healing in Astanga Hridaya (AH)

In AH (5th Cent.), which was popular text of the Ayurveda in Medieval times, the use of Garlic continued as evident from the similar name- *Lasuna* as referred in two previous original texts of Ayurveda. It is worthy to mention here that the similar verse line to line from Charaka Samhita has find place in AH *gulma Chikitsa*, which confirms the tradition continued during that period also. In 6th Chapter of Sutrasthana of AH, it is included in vegetable group. Its properties has been said as; *Bhristikshonah* (excessive sharp and hot), *katu* in *rasa* and *vipaka* (pungent-taste and also after digestion and metabolism), *sara* (laxative), *snigdha* (unctuous), *rochana* (stimulating the appetite), *guru* (heavy). It is one of the drugs which is having *vrishya* (aphrodisiac) in spite of *Katu* (pungent) *rasa* (taste) inclusively referred in *Rasabhediya* 10th chapter of Sutrasthana.

In this text a few new health benefits including earlier texts, like- *hridaya* (beneficial to heart) *Kesya* (beneficial for hair), *vrisyā* (aphrodisiac), *dipana* (enhancing digestive fire), *bhagnasandhanakrita* (union-promoting in fracture), *rasayana* (promotive therapy) are enumerated. In case of regaining *mada* (intoxication) *murcha* (fainting) and *sanyasa* (complete exhaustion) due to chronic alcoholism, the juice of Garlic is advised.

It alleviates intermittent fever, if consumed with oil in the morning. Also alleviates severe *Vatic* disorders (diseases caused by vitiation of Vata), *kilasa* (vitiligo), *kustha* (dermatopathies), *gulma* (intra-abdominal lump), *arsa* (hemorrhoides), *meha* (turbidity in urine), *krimi* (worm), *kapha* (one of the three bio-elements), *anilvata* (one of the three bio-elements), *hidhma* (hiccough), *pinasa* (chronic Rhinitis), *svasa* (difficult breathing) and *kasa* (cough). At other place, the compound formulation of Garlic with other plant and mineral origin medicinal substances has been recommended to alleviate *apasmara* (epilepsy) [25]. Looking to the popularity of the AH, this treatise is included with two great treatise of ancient period i.e., CS and SS and all three are known together as *Brihatrayi* (greater treatise) of Ayurveda even today.

## 7. Carefulness on continuous use of Garlic-Lasuna

Its continuous use as food items causes vitiation of *pitta* (one of the elements among three *doshas*), which leads to *raktapitta* (internal hemorrhage). The prodromal symptoms of occurrence of internal hemorrhage has also been reported such as; *annannabhilasa* (aversion to food), *bhuktasyavidaha* (burning on immediate ingestion of food), *suktaamlagandharasa udgaara* (eructation having smell and taste of sour gruel), *charderbhikshanamaagama* (nauseating and frequent urge for vomiting), *Charditasya vibhatsata* (disgusting vomitus-consisting blood), *svarabheda* (hoarseness of voice), *gatranam sadanam* (malaise), *paridaha* (burning around the body) etc. [26]. Similar caution has been found in AH as follows; continuous use of Garlic-Lasuna causes *raktapittapradusana* (vitiation of *rakta-pitta* causes internal-hemorrhage) [27].

## 8. Healing benefits of Garlic- Lasuna in later works of

### 8.1 TIM

Another noted- treatise on Principles and Practices of Ayurvedic Medicine i.e., Cakradatta of 11th Cent. also having single and compound preparations prescribed in number of disorders like; *Lasunadi yoga* (a compound formulation) having *Pippali mula* (root of *Piper longum* L.) and *Abhaya* (*Terminalia chebula* Retz.) has been prescribed to alleviate spleenomegaly. At other place, the *Lasunadya ghrita* (a compound preparation with clarified butter) is prescribed to alleviates *sula* (abdominal colic), *gulma* (abdominal lump), *arsa* (hemorrhoids), *udararoga* (abdominal disorders), *pandu* (anemia), *pliha* (spleenomegaly), *yonidosha* (uterine disorders), *krimi* (worms), *jvara* (fever), *vata* and *kapha* disorders and *unmada* (insanity). In this text also its synonym *Rasona* is find place and *Rasona kshira* (Garlic-milk), *Rasona-taila* (Garlic-oil), *Rasona-pinda* (Garlic-bolus), *Rasona-sura* (Garlic-liquor), *Rasonadya-kalka* (Garlic-paste) and *Rasonadya ghrita* (Garlic-clarified butter) are some of the compound formulations advised in various ailments. It is interesting to mention here that the *Rasona kshira* is the same preparation of CS with little change in verse and the indications are the same



as of *Lasuna-kshiram* of CS. i.e., The *kshira-paka* (medicated- milk) prepared of *suddha-suska Lasuna* (clean-dried garlic) in definite ratio of *lasuna* (garlic): *udaka* (water): *Kshira* (milk) cures *vatajagulma* (intra-abdominal tumor due to vata-vitiation), *udavarta* (upward movement of vayu), *gridhrasi* (sciatica), *visamajvara* (irregular-fever), *hridayaroga* (cardiac-diseases), *vidradhi* (abscess) and *sotha* (inflammation) [28].

In popular manuscripts of 12th Cent.- Vangasena Samhita, single as well as compound formulations of Garlic-Lasuna has been prescribed. The fine paste of Garlic bulb with clarified butter with consumption of clarified butter in diet alleviates all kinds of Vatic disorders (diseases caused due to vitiation of vata-dosha in body). At other place, a compound preparation- *Rasonapinda* (bolus of Garlic), either with *jala* (water) or *madya* (alcohol) is praised to alleviate- *amavata* (vitiating vata with endotoxin), vitiating *vata* in particular location and entire body, *apasmara* (epilepsy), *svasa* (dyspnea), *kasa* (cough), *gara* (poisoning), *unmada* (insanity), *vatabhagna* (fracture due to vitiating vata), *sula* (colic) and *jantu* (worm infestation). The oil prepared from the paste and juice of Garlic alleviates all types of pain due to vitiating *vata dosha* [29].

In the most popular work of Srangadharacharya- Srangadharasamhita of 13th Cent., single and compound from of Garlic- *Lasuna* are included. The *kalka* (paste) of *Rasona-Lasuna* mixed with the oil of sesame is prescribed in *visamjvara* (intermittent- fever) and vatic diseases. In continuation to that a compound formulation prepared with matured Garlic-*Lasuna* is recommended to alleviate *akangavata* (vitiating *vata* in particular location), *sarvanga vata* (vitiating *vata* in entire body), *apasmara* (epilepsy), *unmada* (insanity), *gridhrasi* (sciatica), *sula* (colic) and *krimi* (worm infestation) etc. [30].

The author Sodhal has composed the text during 14th Cent. and named it *Gadanigrah* in which disorders along with their treatment are lucidly described. Amongst the vegetable origin drugs Garlic-*Lasuna* is also found place in many diseases as single and compound formulations. The compound formulation- *Lasunaddyā ghrītam* (Clarified butter preparation of Garlic with other drugs) with honey and sugar alleviates- *raktapitta* (internal hemorrhage), *kasa* (cough), *gulma* (intra abdominal tumor) etc. At other place with other vegetable drugs, clarified butter preparation of Garlic- *Lasuna* is prescribed in *kasa* (cough), *svasa* (dyspnea), *jvara* (fever), *hridayaroga* (cardiac disease) etc. An exclusive clarified preparation is made to overcome the *gulma* (intra abdominal tumor) and vatic disorders has been prescribed. The *Rasonapinda* (bolus of Garlic), either with *jala* (water) or *madya* (alcohol) is praised to alleviate- *amavata* (vitiating vata with endotoxin), vitiating *vata* in particular location and entire body, *apasmara* (epilepsy), *svasa* (dyspnea), *kasa* (cough), *gara* (poisoning), *unmada* (insanity), *vatabhagna* (fracture due to vitiating vata), *sula* (colic) and *jantu* (worm infestation). The oil preparation of *Kalka* (paste) and *svarasa* (juice) of *Rasona*- Garlic cures all vatic disorders [31].

During 15th Cent. Kaiyadeva *Nighantu* (Materia Medica) came into existence, which was created by Kaiyadeva. In fact, initially it was known as *Pathyaapathya vibodhaka* (knowledge on wholesome and unwholesome). In this *Materia Medica*, Garlic-*Lasuna* its synonyms, properties, action and therapeutic uses as an individual drug has been described. Here the similar properties as found in CS and SS are described. It is worthwhile to mention here that the therapeutic uses are also the same as found in original texts [32].

The noted author of 16th Cent.-Bhavamishra created *Bhavaprakasa* in which single and compound formulations are prescribed. In this text, the compound formulation consisting of *Lasuna* and other vegetable drugs prepared in mustard oil is poured in ear to alleviate- *karnasula* (earache) and *karna-nada* (tinnitus). The paste of Garlic mixed with sesame oil and rock salt cures *visamjvara* (intermittent

fever) and all vatic disorders if consumed in the morning and Garlic paste in oil removes *apasmara* (epilepsy). In case of wound with maggots the paste of Garlic is applied to kill them. Administration of the paste of Garlic with sesame oil cures *ardit* (facial paralysis). *Rasonapinda* (bolus of Garlic), a compound formulation is advised to alleviate- *amavata* (vitiated vata with endotoxin), vitiated *vata* in particular location and entire body, *apasmara* (epilepsy), *svasa* (dyspnea), *kasa* (cough), *gara* (poisoning), *unmada* (insanity), *vatabhagna* (fracture due to vitiated vata), *sula* (colic) and *jantu* (worm infestation) [33, 34]. He also created Bhavaprakasa *Nighantu* (Materia - Medica) in which Garlic-*Lasuna*, its synonyms, properties, action and therapeutic uses as single drug has been described. Almost similar properties, action and therapeutic uses are seen as found in CS & SS. Here, it is stressed that a person should not do exercise, exposure to Sunlight, anger, excessive water drinking while consuming Garlic- *Lasuna*, because of hot in potency [35].

Pandit Narhari in 17th Cent. created Raja- *Nighantu* (Materia Medica) in which Garlic -*Lasuna* along with synonyms are described. Further, its properties like- *Usna* (hot), *katu* (pungent), *picchala* (slimy) *snigdha* (unctuous), *guru* (heavy), *tikshna* (sharp), *svadurasa* (sweet) has been enumerated. By virtue of its properties it has health promotive effects viz- *atibalya* (excess strengthening), *vrisya* (aphrodisiac), *medha* (mental strengthening), *varnya* (improve complexion) etc. A part from that it also alleviates- *hridaroga* (cardiac disorder), *bhagnasthisandhankara* (union promoter of the fractured bone), *jvara* (fever), *gulma* (intra-abdominal tumor), *sula* (colic), *sopha* (inflammation) etc. [36].

During 18th Cent. Kaviraj Govind Das Sen compiled a manuscript and named it Bhaisajyaratnawali, which consist of 2600 formulations. In this work number of single and compound formulations of Garlic are included, which are as follows; *Lasuna- Kshira* (milk preparation of Garlic), *Lasunadi- ghrta* (clarified preparation of Garlic), *Rasona-kalka* (garlic-paste), *Rasona-taila* (garlic-oil), *Rasona- sura* (garlic- liquor), *Rasonadi-kvatha* (decoction of Garlic with other drugs) etc. They are recommended in *apasmara* (epilepsy), *svasa* (dyspnea), *kasa* (cough), *gara* (poisoning), *unmada* (insanity), *vatabhagna* (fracture due to vitiated vata), *sula* (colic) and *jantu* (worm infestation) etc. Most of the preparations contains in Bhaisajyaratnawali are still in practice and prepared by the Ayurvedic Pharmaceutical industries [37].

In 19th Cent. Shaligram *Nighantu- Bhusanam* was created by Lala Shaligramji Vaisya, which is considered the last *Nighantu* of that time written in ancient style. In this *Nighantu*, Garlic-*Lasuna* has been placed under the heading of *kandasaka* of *sakavarga* (vegetable group). Here also, its synonyms like-*Rasona*, *suklakanda* etc. as referred in previous works are included. Similarly, properties, action, therapeutic uses find in CS, SS and later works are incorporated, which shows continuation of the TIM of ancient origin even during that period. The botanical name *Allium sativum* L. Is included here [38].

A good number of *Nighantu's* were come into existence during 20th Cent. Of them, the famous is *Adarsha Nighantu*, created by Vaidya Bapalal. In this *Nighantu*; Garlic- *Lasuna* is included in *Lasunadivarga* (Garlic group) and its names in various regional languages of India and, Latin scientific name *Allium sativum* L. has been included. Its properties like- *katu* (pungent), *madhura* (sweet) in taste, *usna* (hot) in potency, *katu-vipaka* (transformed state after digestion and metabolism) and *kapha* and *vata doshaghna* (pacifying *kapha* and *vata dosha*) is written in a way to make it more clear to the seekers of Ayurvedic based knowledge on Garlic. It is worthwhile to mention here that the author has give original textual references on Garlic-*Lasuna* compiled from CS, SS, AH, popular *Nighantu* of different period viz., *Dhanvantari*, *Raja*, *Bhavaprakasa* etc. Thus, it shows that the author has brought forward diversified knowledge at

one place on Garlic-Lasuna. This Nighantu is included in the graduate course of Ayurveda taught in Ayurvedic institution in India [39].

## 9. Etymology of *Lasuna*- Garlic and binominal nomenclature based on usna (hot) potency

It is obvious that the Garlic by the name of *Lasuna* was much more earlier in use in India i.e., since ancient period and even one of the properties hot (usna) is referred in original scriptures of Ayurveda (1000 BCE). The etymology of the *Lasuna* is defined by Dalhana as follows; *Lasati bhinatti roganiti lasunam* means, which destroy diseases [40].

The binominal nomenclature / botanical name of the Garlic was confirmed by Linnaeus as *Allium sativum* L. in 16th Cent. It is interesting to note here that the genus *Allium*, Linn. was derived from the Celtic all (relating to the Celts or their languages-a branch of Indo-European family of Languages), signifies “hot”, or “burning”. Thus it seems that the genus- *Allium* L. has its base from the most prominent “hot” potency”. It is worthwhile to mention here that a good number of binominal nomenclatures have its basis on Sanskrit names of the vegetable drugs as evident from William Roxburgh’s, “Flora Indica” where he has mentioned that he has picked up names of the various drugs from the works of Amarkosa, Rajanighantu and Bhava-prakasha, which helped him to ascertain their Botanical nomenclature [41]. It is quite possible that the usna (hot) potency, which has included in almost all the works of Ayurveda have attracted Linnaeus and coined the genus *Allium* [42]. Ayurveda advocates that alleviation of any disorders is always due to the properties which exist in a Drug. In fact, any substance of natural origin qualifies a Drug if used rationally in accordance with the Basic Principles of Dravya-guna-karma (substance-properties-action).

## 10. Rationale use of natural substance and Garlic-Lasuna for health and healing

The natural origin-food substance(s) of plant and animal origin are predominance in *bhautika* / *saririka* gunas (physical / bodily attributes) in accordance with the geographical region. They are 20 in numbers and grouped in 10 pairs because relative to each other. They are as follows; *guru-laghu* (heavy-light), *sita-usna* (cold-hot), *snigdha-ruksha* (unctuous-non-unctuous), *manda-tikshna* (dull-sharp), *sthira-sara* (stable-moving), *mrdu-kathina* (soft-hard), *visada-picchila* (non-slimy-slimy), *slakshna-khara* (smooth-rough), *sthula-sukshma* (massive/gross-fine), and *Sandra-drava* (thick-liquid). Because of relative to each other, they produce visible changes in the bodily substances. The judicious use of the food substances in accordance with the beneficial to the *prakriti* (natural body constitution) of a person keeps healthy all along the life, whereas contrary to that use of un-wholesome food leads to diseased state of the body. In diseased state apart from administration of wholesome food to alleviate the disorder drug potency is kept in mind before writing a prescription.

This potency in a drug is known as *Virya* in Ayurveda. In fact, out of aforesaid twenty (20) *gunas* eight (8) i.e., *guru-laghu* (heavy-light), *sita-usna* (cold-hot), *snigdha-ruksha* (unctuous-non-unctuous) and *mrdu-tikshna* (dull-sharp) are designated as *virya* (potency) because of excellent allowance of *gunas* acquired naturally in a medicinal substance. Considering the potency of a drug, it is prescribed in definite dose as compare to food substance consumed in large quantity. Thus food

(having gunas) as well as drug (having *virya*) play important role in the alleviation of the disorders to bring back equilibrium of the three doshas and therefore in Ayurveda wholesome food (pathya) is the integral part of the prescription along with potential drug [43, 44]. The properties like- *snigdha* (unctuous), *picchala* (slimy) in Garlic- Lasuna have health benefits, which is enhanced when consumed with milk, butter or clarified butter based preparations, whereas- *guru* (heavy), *usna* (hot), *tikshna* (sharp), *katu* (pungent), *sara* (laxative), *svadurasa* (sweet) has healing effect in a diseased person with hot water, honey, sesame oil etc.

## 11. Lasuna- Garlic in the ayurvedic pharmacopoeia of india

In the Ayurvedic Pharmacopoeia of India Part-I, Vol.III, Garlic-Lasuna (bulb) is defined as follows; Lasuna consists of *Allium sativum* Linn.(Fam.Liliaceae); a perennial bulbous plant, cultivated as an important condiment crop in the country. *Rasona* and *Yavanesta* two synonyms with names in Indian regional languages are find place here. The macroscopic and microscopic description of a clove of the bulb is described. Following this; identity, purity and strength, thin layer chromatography, constituents, properties, action, important formulations- *Lasunadi vati*, *Lasunadi ghruta* and *Vacha-lasunadi tail* are included here. The therapeutic uses and prescribed dose; 3–6 g. of the Drug shows its importance in Ayurveda [45].

## 12. Scientific evidence of efficacy of *Allium sativum*- Lasuna (Garlic)

The pre-clinical study of Garlic extract (50–500 mg/ kg,) has been found anti-hypertensive response as reported by Sanfilippo and Ottaviano [46], Petkov [47], Chanderkar and Jain [48]; antiarrhythmic by Martin et al., [49], Isensee et. Al., [50]; cardioprotective effects on rodents by Saxena et al., [51], Kojima et al., [51] Ashraf et al., [52], Sarvanan & Prakash [53], Cheng et al., [54]. The dietary intake of garlic powder (1.0 per cent) for 10- weeks significantly prohibited the incidence of ventricular arrhythmias after ischaemia and reperfusion in the isolated rat heart (Langendorff) preparation Martin et al., [55]. Cardioprotective effect of Garlic was observed against doxorubicin and hypocholesterolaemic diet induced cardiac injuries and pulmonary hypertension- induced cardiac hypertrophy in laboratory- animals, Kojima et al., [56], Cheng et al., [57]. Fibrinolytic activity of garlic was observed in animals, Singh & Chaturvedi, 1974 [58]. The Garlic and its Phytoconstituents were reported to inhibit platelet aggregation and to increase the bleeding time and clotting time of experimental animals, Jain et al., [59], Allison et al., 2012 [60].

Garlic have been found other bioactivities viz., antidiabetic, Brahmchari and Augusti [61], Jain et al., [62], Padiya & Banerjee [63]; nephroprotective, Rafieian et al., [64]; chemopreventive /anticancer, Belman [65], Rao et al., [66], Ariga et al., [67]; antibacterial Rao et al., [68], Jezowa et al., [69]; anti-Helicobacter Pylori, Sivam [70]; antifungal, Tansey & Appleton [71]; antiviral, Tsai et al. [72]; anthelmintic, Abdel- Rahman et al. [73], antispasmodic, Gaffen et al., [74], Aquel et al., [75] anti-oxidant, Popov et al., [76], Dong et al., [77] anti-toxic, Bhatia & Ahujari [78], Senapati et al., [79], immunomodulatory, Tabari & Ebrahimipour [80] in pre-clinical experimental animals.

On clinical study also, Garlic were seen effective in the patients of- hypertension in which significant lowering of systolic and diastolic blood pressure was recorded, Sobenin et al. [81], Ashraf et al., [82]; coronary artery disease, Bordia et al., [83], Williams et.al, [84]; peripheral arterial occlusive disease, Kieseewetter

et al., [85]; atherosclerosis, Rapp et al., [86], Budoff et al., [87]; hyperlipidemia, Bordia et al., [88], Bhusan et al., [89], Mahanta et al., [90], Vorberg & Schinder [91], Jung et al., [92]; type-2 diabetes, Soebinin et al., [93], Ashraf et al., [94], Kumar et al., [95]; systemic sclerosis, Rapp et al., [96]; Common cold, Josling [97]; cold and flu, Nantz et al., [98]; Rheumatoid arthritis, Denisov et al., [99].

### 13. Conclusion

The use fresh plant as well as mature and dried cloves of Garlic is in use in Traditional Indian Medicine since ancient times as per the documented evidence in original scriptures of Ayurveda. The original works are written in Sanskrit Language, therefore, Garlic is seen by the name of *Lasuna* along with its popular synonym *Rasona*. The traditional Indian Medicine has its foot print in Vedic Compendia (3000 1500 BCE) as the similar named plants are find place in Charaka Samhita and Sushruta Samhita, thus the use of vegetable origin substances can be visualized more than 5000 years in practice and in case of **Lasuna**, it is more than 3000 years. The etymology of the word Lasuna signifies- destroyer of diseases. The properties based action and therapeutic uses itself speaks about the rational use of Garlic- Lasuna in Ayurveda. The genus *Allium* seems to be based on one of the predominant properties 'hot' found in *Lasuna* as referred in both the original scriptures of Ayurveda. The bilingual name *Allium sativum* was coined by Linneaus in 16th Century, which was included later on in successive works.

As per the evidence, the varies uses of *Lasuna*-Garlic (*Allium sativum* L.) as food substance as well drug substances is well established in Indian Traditional Medicine, which is known as one of the traditional Medicines of the World by World Health Organization. The traditional continued since then and documented by successive generation in different period of times, and even tradition prevail in today's India. For Health; it is recommended as; strengthening, aphrodisiac, promoting- intellect, galactagogue in mother, vision and complexion, beneficial to hairs etc. and for the alleviation of disorders it is prescribed in cardiac diseases, chronic and intermittent fever, abdominal colic, intra-abdominal tumor, piles, dermal disorders, worm infestation, diminished vision, pterygium, difficult breathing, tuberculosis, insanity, epilepsy etc. Single and compound formulae like Garlic- juice, paste, bolus, clarified butter, oil, milk, liquor and oil, clarified butter, tablets etc., respectively. In fact, the rational use as well formulae are prepared on the basis of properties like; unctuous, hot, pungent, slimy, heavy etc.

It is worthwhile to mention here that the health benefits of Garlic-Lasuna as envision by ancient scholars of TIM- Ayurveda now proved scientifically by the various scholars working on *Allium sativum* L. like- hridaroga (antiarrhythmic, cardioprotective effects, ventricular arrhythmias after ischaemia), *raktapitta*-internal hemorrhage (increase the bleeding time and clotting time), *jantughna* (anti-bacterial), *kustha* (dermatopathies- antifungal), *krimighna* (anthelmintic), *sula* (antispasmodic), *balya*-strengthening(immunomodulatory), vata-kapha disorders (common cold, cold and flu) etc., which corroborate the uses of Lasuna- Garlic in TIM- Ayurveda.

Thus, it is obvious that Lasuna- Garlic (*Allium sativum* L.) is one of the vegetable origin substances in India has its evidence of uses traditionally more than 3000 years for the protection of Health as well as Healing (alleviation of disorders rationally).

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