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CRITICAL EVALUATION OF ZINGIBER OFFICINALE ON ITS NOMENCLATURE 'VISHWABHESHAJA-THE UNIVERSAL MEDICINE' ON THE BASIS OF ITS PHARMACODYNAMICAL & CLINICAL STUDIES

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ABSTRACT :

It has been argued in ancient Ayurvedic literature that *Śunthi* has the potential of contributing to addressing numerous clinical conditions– both in terms of rebuilding what has been eroded and in relieving sufferings. It is known as *Vishwabheshaja* in Ayurvedic Texts. The pharmacological and clinical research framework in this paper suggests that *Śunthi* in Ayurvedic Texts also known as *Vishwabheshaja* proves well in researches conducted in western countries to be recognized as "The Universal Medicine". Data collection was from various clinical and pharmacological studies across the world. The evidence based findings suggest that *Śunthi* perceived its *Vishwabheshaja* nomenclature was well suited and made positive contributions, particularly in various medical disorders used alone or in combination with other herbs. The findings reported in this paper are useful for policy formulation about clinical research by Ayurvedic community on commonly available herbs in our country. As this study is contextualized in few common medical conditions and can therefore not be applied to all diseases. Authors believe that this study has much to offer to future research designs to understand how easily available *Śunthi* and similar herbs can improve the health of common people and offer global recognition of Ayurvedic system and prevent biopiracy by other countries.

Key words: *Śunthi*, *Zingiber officinale*, *Vishwabheshaja*, Universal Medicine, Ayurvedic Herbs, Ayurvedic Pharmacology

INTRODUCTION: *Śunthi (Zingiber officinale)* has been acknowledged as *Vishwabheshaja*[1], "The Universal Medicine" in ayurvedic literature. It has been a cure for digestive, respiratory, and circulatory disorders since centuries.[2, 3] Ginger's curative ingredients are being isolated and tested against some of the widespread ailments. In trying to understand how *Śunthi* can be useful it is important to do so from clinically established framework that encompasses the multi-dimensionality solutions of the medical issues faced by people. This paper gives a brief background of ginger, its traditional use, and scientifically proved effectiveness in clinical trials to be established as *Vishwabheshaja*, or "Universal Medicine".

AIMS AND OBJECTIVES:

1. To understand the pharmacological properties of *Śunthi* for its acceptance in modern scientific community.
2. To understand the clinical effects of *Śunthi* in human metabolism with supporting evidences.
3. To evaluate *Śunthi* in the context of term *Vishwabheshaja*, "The Universal Medicine" as mentioned in ayurvedic texts by evidence based solutions.

MATERIALS AND METHODS:

Materials were compiled from published research studies globally and their all available sources. A stepwise method was adopted to establish the source of resources for review. The peer- reviewed literature was the major means of data collected about the clinical and pharmacological properties of *Śunthi*. Every data was analyzed to collect and present accurate information. The researches and advancements in the field are being presented.

Inclusion Criteria:

We included data that discussed *Zingiber officinale* properties supported by scientific researches and offered clinical effectiveness in various medical conditions. Articles were considered for study even if they referred to establishing a link between *Zingiber officinale* and its clinical effectiveness.

Exclusion Criteria:

Documents were excluded that were without verified data or concerned evidences and not apprehensive with clinical relevance. The data collected from various sources has been critically analyzed and logical conclusion is being presented in this paper.

OBSERVATIONS & RESULTS:

Ayurvedic interpretation:

As per ayurvedic literature, Ginger's rasa (taste) is pungent and sweet, it is *ushna virya*, and its *vipaka*, (post- digestive effect) is considered sweet. Due to its *madhur vipaka*; it leaves a calm and enduring effect. Through its *ushna virya* properties, it suppresses *vata* and *kapha*, while escalating *pitta*, despite the fact that it frequently originates counter-balanced in *pitta*-reducing remedies. As per the understanding of the "Universal Medicine," it affects all *dhatus* (tissues) and particularly the respiratory, circulatory and digestive, *srotas* (channels).[4-7] As per Ayurvedic principles of pharmacology Ginger destroys toxins (*amanashak*), digestive (*pacana*), prevents nausea (*chardinigrahaṇa*), stops hiccups (*hikkānigrahaṇa*), increases the digestive fire (*agni dīpana*), absorbs liquid from the intestines (*grāhī*), eradicate piles (*arśoghna*), reduces feelings of cold (*śitapraśamana*), rejuvenative (*rasāyana*), alleviates cough and breathing

complicatedness (*kāsaśvāsahara*), and alleviates pain (*vedanāsthāpana*).[8]

Western interpretation:

In western herbal medicine terminology, it is portrayed as an analgesic, anti-tussive, anti-atherosclerotic, anti-oxidant, cardiotonic, hypolipidemic, carminative, sialagogue, anti-flatulent, anti-spasmodic, expectorant, stimulant, emmenagogue, antimicrobial, circulatory stimulant, anti-emetic, appetizer, and diaphoretic. It has been indicated in various digestive disorders, which is not limited to gas, belching, colic, abdominal pain, vomiting, indigestion, nausea, and motion sickness. It is also used for rheumatism, respiratory disturbances, certain orthopedic conditions gout, colds, flu, laryngitis, hemorrhoids, headaches, cardiac complaints, gas, cramps in the abdomen, including menstrual cramps due to cold[9], migraine, lumbago, fever, and its fresh juice is also reported to used in burns.[10-14]

Ārdraka & Śunthi:

Śunthi has numerous names athwart civilizations, and even within Ayurveda. Mainly the fresh form is called as *ārdraka* (moist), and the dry part as *nagara* or *śuṇṭhi*, meaning "dry." Researches authenticate the distinction between the characteristics of fresh and dried ginger. As the unstable and diaphoretic essential oils β-sesquipphellandrene and zingiberene decompose on drying; gingerol converts into shogoal production making it warmer.[15] Ayurvedic texts considers *ārdraka* for promoting excellent voice, relief in *vibandha* (constipation), *ānāha* (obstruction to the movement in the stomach), and *śúla* (colic pain). It is known to be an efficient appetizer, aphrodisiac and cardiac tonic.[16-17]

DISCUSSION:

The aim of the data collection was to gather information to answer the research questions regarding the pharmacological and clinical properties of *Śunthi (Zingiber officinale)* and whether it has to be considered as *Vishwabheshaja* / Universal Medicine. This study uses qualitative technique in collecting and analyzing data based on a limited sample size.

Digestive system:

Ginger stimulates the digestive system and as per ayurvedic principles it had been observed to increase digestive fire; *Jatharagni* and proved to secrete digestive enzymes. *Agni* of the *Rasa dhatu* the *Rasdhatwagni* is benefitted by fresh ginger where as dry ginger has the potential of clearing *Ama* and also found useful in conditions of *Kledaka kapha* vitiation. In a RCT it has been established that Ginger could be successfully used as the remedy of motion sickness. Results of this study were analyzed and found that it had the potential of reducing nausea, increased gastric activity and release of vasopressin which is induced by cerebral vacation.[18]

In another RCT an experiment done on naval cadets unaccustomed to sailing in heavy seas; for analyzing effectiveness of ginger on motion sickness, ginger ingestion gave fewer symptoms of nausea and vertigo.[19]

Anti-microbial:

Compounds containing gingerol have the properties of antimicrobial and antifungal characterstics which can be used for pharmaceutical purposes.[20] Another study demonstrated that ginger extract and its compounds are possessing higher antibiotic potential than onion against various bacterial species like *E.coli* and B.subtilis. [21-22]

Anti-inflammatory:

Anti inflammatory actions of ginger are being recognized as researches are conducted. From an Ayurvedic point of view, dry ginger is considered as *āma-shodhak*, *śleṣaka* kaphahara, toxin-digesting, anti-inflammatory in arthritis (*āma-vāta*). It is an important constituent in many traditional ayurvedic formulas, e.g. *triphala guggulu*, *yograj guggulu*. Even it is *ushnavirya* but posses anti inflammatory property by inhibiting the activity of prostaglandins.[23] In a smaller alternative experiment, osteoarthritis patients applied dry ginger on lumbar areas to manage osteoarthritis symptoms along with to cope with psychological distress, social isolation and general inability.[24]

Respiratory system:

Ayurvedic texts consider *Śunthi* as *kāsaśvāsahara*; means for alleviating cough and breathing difficulties. Fresh ginger has the ability to prevent cold as it stimulates peripheral circulation, vasodilatation, and induces sweating. As per ayurvedic concept *kapha-vāta kasa* and *jwara* is reduced as soon as the *āma* clears from the *rasa* and *rakta dhatu*. *Śunthi* has been proven beneficial in asthma, as an anti-hypersecretory, anti-inflammatory, and ailing to revamp the body after respiratory disturbances. One study established its airway contraction inhibiting properties through its anti-inflammatory properties.[25] A German research study found such activity in human bronchial epithelial cells. It was established that ginger compounds may be used as anti-inflammatory medicines in respiratory infections, similarly in asthmatic patients.[26]

A Taiwanese research concluded that ginger had the ability to overturn phthalate ester-mediated airway remodeling.[27] Thus, ayurvedic principles of respiratory disorders management involving ginger as a constituent proves to be evidence based.

Anti carcinogenic:

6-Gingerol helps in reduction of gastric cancer cells whereas 6-Shogaol damages microtubules of the cancer cells, stumbling their reproduction and so reducing their ability to reproduce.[28] 6-gingerol inhibits cell adhesion, invasion, motility and activities in breast cancer cells. Inhibition of cancer cells was found to be dose dependent which is directly in proportion of concentration of ginger compounds.[29] Similar research from the National University of Singapore; without creating cytotoxic conditions; isolated constituents of ginger, 6-, 8- and 10-shogaol were proved to have an inhibitory outcome on induced breast cancer cell invasion.[30] Ginger extract exhibits a chemotherapeutic effect in the treatment of liver cancer. It was demonstrated in a study where reduction in the incidence of liver neoplasms and the risk of subsequent carcinoma was minimized by using ginger isolated chemicals.[31]

Cardiovascular system:

Ginger's many properties illustrate widespread potential in cardiovascular disease as well. Since ages; Ginger is known for its ability to reduce feelings of cold. That's why it had been categorized under as *śitapraśamana* medicine; it is also used for congestive heart conditions and poor circulation in combination with *arjuna* and *guggulu*.[32] Chemicals have the potential to increase adrenaline secretion, which heats the body.[33] In one research, body temperature increasing property of ginger was scientifically examined. It was established that gingerols and shogaols

activated a chemical, which detects and regulates body temperature. Its cost effectiveness with other conventional agents was also established in a research published in International Journal of Cardiology with significantly lower side effects.[34] Ginger as a medicine may be utilized as a cholesterol-lowering, antithrombotic and anti-inflammatory agent; confirmed in a study by using an orally-administered, aqueous extract of ginger in rats. [35]

RECOMMENDATIONS:

In the light of recent advancements of clinical research; ayurvedic researchers also have to face the challenge to establish scientific validity of our system and protect our heritage to biopiracy by other stakeholders in this sector. It is the opinion of authors that future researches must continuously evaluate other herbs like *Śunthi.* Such efforts may not only broaden and deepen the understanding of clinical effectiveness of Ayurvedic system of medicine but also our system may provide safe and cost effective solution of providing healthcare to humanity.

CONCLUSION:

Śunthi is universally used in various medical conditions and its versatility expands in all directions. Its effect in digestion proves to be widespread, functioning to initiate (*agni dīpana*) and stimulate (*pācana*) the digestive process, it evades nausea and vomiting (*chardinigrahaṇa*), proved to treat ulcers, and known to inhibit harmful bacteria and fungi. It is also proved to stimulate and defending the liver. Its role in assisting positively in inflammatory and cancerous environment is also been proved. Its active chemicals has also been confirmed to be hormone progressive and other biochemical pathways, reactive oxygen species, free-radical scavenging (similar to *āmanāśaka guna*) and harmful gene expression. It reduces inflammation and carcinogenic conditions at similar time. It has been proved to be a preventive, pain reliever (*vedanāsthāpana*) and *rasāyana* to injured tissues.

Hence from these facts we can conclude that the research question of *Śunthi* being Universal medicine seems to be valid; not only through time in ancient medical systems, but also throughout present-time evidence based clinical and experimental research for some of widespread common diseases.

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