

Future Scope and Strategies for Preservation of Health through Ayurveda

Dridhabala Award Winner essay in first international essay competition on health' 2020

organized by

Charak Samhita Research, Training and Skill Development Centre (CSRTSDC)

in collaboration with

Institute of Teaching and Research in Ayurveda, Jamnagar, India

Author:

Dr. Sangeeta Jadhav, Ayurveda Practitioner, Navi Mumbai, India

Editors:

Dr. Gopal Basisht, Orlando, USA, Dr. Yogesh Deole, India

Self-preservation is accepted as the survival instinct of every living being. In human beings' preservation of health is an integral part of self-preservation for centuries. Evidence of infections like tuberculosis and leprosy from the human skeletal remains of the ancient Indus Civilization (2200-1900B.C.), indicates their rationale for health awareness practices, like sanitation facilities and water management practices.^[1] Eventually, in the 21st century also tuberculosis is among the top ten causes of death. The current revolutionized Digital age trembled due to the unusual virulent detrimental strains of the COVID 19. Since pathogens share our environment, this outbreak should be considered a warning for such exotic outbreaks in the future. The maintenance of health quality and prevention of illnesses has become the priority for any health care system. A multifaceted and multifocal integrated approach of ancient wisdom and contemporary medicine to preserve health is awaited.

1. Context of health from traditional to contemporary science:

Traditional medicine systems like Chinese traditional medicine (TCM), Japanese Ikkando/Kampo, American and European Naturopathy, Korean Sasang, Greco-Arabic Unani, and Indian Ayurveda share one or more similar basic concepts as a holistic approach, personalized medicine, body constitution, bioenergy, and the interconnection of body, mind, and soul. Despite following diverse biological and physiological entities, biological energy maintenance through physical, mental, and spiritual harmony is a common objective for health preservation, appreciated by these systems.^{[2][3][4]}

Ayurveda distinctly denotes the manifold meaning of health, illness, and healthy life in multiple references with common understanding. The harmony or disparity among the health components, the *dosha* (functional units), *dhatu* (body tissues), *mala* (end products), *agni*, *indriya* (sense organs), *mana* (mind), and *atma* (soul), is called health or illness respectively.^{[5][6][7]} In health, the physiological functions of the *dosha*, *dhatu*, *mala*, *agni* can be depicted physically from the smooth functioning of sense organs and psychologically from gratification. They are also reliant on the circadian cycle, habitat, age, biological constitution, and diet. Likewise, gratification is reliant on the biological and psychological constitution. Equilibrate *dosha prakriti* (biological constitution) is ideal but rare. All other unique combinations of *dosha prakriti* are always prone to diseases due to this inequality. Though these uneven inborn *doshas*, themselves are not harmful, maintaining them by their opposing attributes is always necessary. A strong physique, healthy lifestyle, and appropriate metabolism improve the tolerance to acclimatize environmental variations and reduce the chances of being unhealthy. [Cha. Sa. Sutra Sthana 21/18-19] ^[6] Health is also stated as contentment, the state of being comfortable; and a youthful, independent, successful, powerful, learned, prosperous and, physically as well as psychologically disease-free life as a contented life. [Cha. Sa. Sutra Sthana 30/24]^[6] While contented life resembles more worldly and materialistic, contentment itself resembles spirituality or a state of acceptance. Righteousness, wealth, desirous, and emancipation are the objective of a happy, high caliber, and determined life. [Cha. Sa. Sutra Sthana 5/103]^[6]

In summary, health is a changing entity, inclined by biotic and abiotic entities. The extent of health comprehends the physical, physiological, social, economic, emotional, intellectual, and spiritual aspects of the individual.

For the past few decades, the attempts made by researchers to define health brought forward similar thoughts. The constitutional health definition of WHO (1948) emphasizes the complete well-being of the physical, mental, and social levels. It was criticized due to the word ‘complete’.^[8] In 1974, in the Lalonde report, the Government of Canada confronted this conventional health concept, including the role of nonmedical health determinants and individual risk behavior. The Alma Ata declaration in 1978 acknowledged that the promotion and protection of health are imperative for economic and social development and a better quality of life. In 1986, the health Promotion held in Ottawa, Canada, clarified it as a consistent “resource” and not as the purpose of living. Recently the WHO health definition is improved with the addition of spiritual health.^[8] Few researchers

have defined health as the capability of adaption to new intimidations and ailments.^[9] WHO defined mental health separately, comprising self-awareness, adaptation to life pressures, economic efficiency, and responsibility towards the community.^[10]

In short, being completely healthy all the time is tough; being healthy most of the time is not difficult but establishing risk-free health is quite impossible. The body always tries to sustain a healthy balance by metabolic remodeling expressed by desire and denial technique, such as less hunger in an extreme climate and anthropometric changes.^[11] Behavior against this natural adaptation and the behavior intensifying biological constitution are precursors of diseases, which can be easily prevented by opposite behavior. Gratification, a source of self-control, plays a key role in any status of health. Acceptance of one's physical condition, socio-economic status, and cognitive power is vital for a healthy life, an all-time process possible with self-conditioning. Thus, health is all about self-awareness, adaptation to ecology, and very much is self-responsibility.

2. Significance of health components:

Health components (*Dosha, Agni, Dhatu, Mala, Indriya, mind, and soul*) are incorporated interdependent, and irreplaceable body entities. *Dosha*, the functional units of the body, have two distinct types, the one responsible for the formation of the body constitution remains unaffected lifelong, and their unique combination can predict the diseases. The other fluctuating dosha are scheduled chronobiologically and affected by ecology, diet, age, and other health components. These variations in the dosha's physiological ratio are inevitable, and the expected imbalance also stabilizes with the time phase or the acclimatization of the *dosha*, as long as the daily and seasonal routines are followed. Vitiating of the *dosha* is the root cause of the diseases. [Su. Sa. Sutra Sthana 21/3]^[5] [Cha. Sa. Vimana Sthana 1/5]^[6] *Dhatu* (*Rasa, Rakta, Mamsa, Meda, Asthi, Majja, and Shukra*) are the perceptible part of *dosha* operation and responsible for the morphology of the body. They can be evaluated by their specific functions in the body and can affect health when predisposed. [A. H. Sutra Sthana 11/4]^[7] *Mala* (*Purisha, Mutra, Sweda, and Dhatu mala*) are the end products of digestion as well as the metabolism of each *dhatu*. Their average production and excretion are important for homeostasis and have diagnostic value. Nonfunctional *dosha, dhatu*, and metabolic remains are also termed as wastes that need elimination. [Cha. Sa. Sharira Sthana 6/17]^[6]

Dosha, dhatu, and mala are the core factors for sustaining the body and can be assessed by their characteristics. [Su. Sa. Sutra sthana 15/3]^[5] Vitiation of dosha is anticipated by accumulation or depletion of *dhatu* and *mala*, while vitiation of *dhatu* is anticipated by the affected production of perspective *dhatu mala*. Augmented *dosha* exhibits different sets of symptoms in six stages of the disease, explained as *Shatkriyakala*. Each stage demands a different treatment strategy. [Su. Sa. Sutra Sthana 21/36]^[5]

Agni is necessary for all biotransformation in the body and all the digestion stages (*avashthapak*) for the appropriate production of *Dosha, Dhatu, and Mala*. It is responsible for the nourishment of the body entities, including indriya and mana, and for the formation of *kitta* (a usable form of waste), accountable for *mala*. It also varies as per the body constitution, season, age, and predominantly depends on the diet's quality, quantity, and time. It is assessed on the basis of digestive capacity of the individual. [Cha. Sa. Vimana Sthana 6/12]^[6]

After interpretation by the *buddhi* (intellect), the knowledge is perceptible with the coordination of the five sense organs, mind, and soul. Again, the perception of knowledge depends upon its superior (*sattva*) or inferior (*raja* and *tama*) quality of the mind. [Cha. Sa. Sutra Sthana 8/5]^[6] The soul is responsible for feelings like rejoicing or grief associated with the sensations. [Cha. Sa. Sharira Sthana 1/18-21]^[6] Thus, the healthy or unhealthy decisions taken by mind and soul for the gratification of sense organs affect physical health. Overuse, underuse, or misuse of sense organs due to lack of self-conditioning leads to psychological diseases termed as *Pragyaparadha*. [Cha. Sa. Sutra Sthana 7/52].^[6] This is why stability of mind is achieved through the control of the indriya (Satvavajaya Chikitsa) through Yoga.

2.1. Determinants of health:

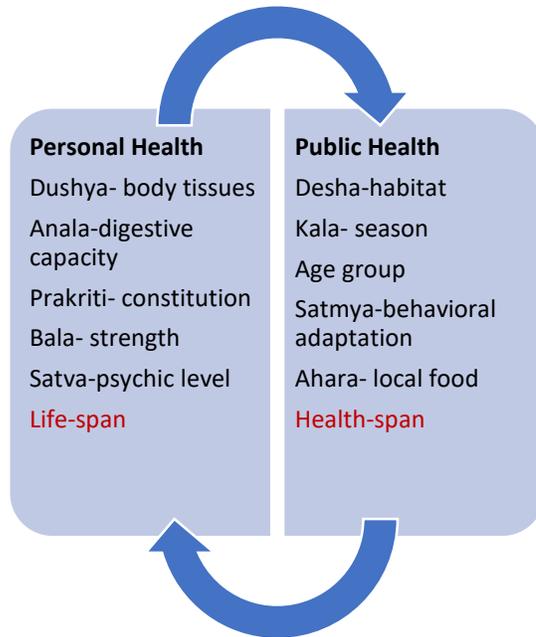
The tenfold examination is described to anticipate the health span and life expectancy of individual. Its frequent evaluation in every season, after recovery, and in every stage of the disease is necessary. [Cha. Sa. Vimana Sthana 8/94]^[6] It comprises ten biotic and abiotic health determinants like habitat, season, strength, biological constitution, age, habituation, and diet, including the affected dosha, *agni*, and mind. Habitat represents the environment. Strength denotes physical and psychological adaptability. Body constitution encompasses genetic, morphological, physiological, and behavioral factors, and habituation indicates the lifestyle pattern. Diet, sleep, and sexual life, the parts of a lifestyle, are also indicated as the three major contributors to health. [Cha. Sa. Sutra Sthana 11/35]^[6] The Lalonde report in 1974 put forward the 'Health Field concept'

and entailed the four fields, human biology, lifestyle, environment, health care organization, as the determinants of health and disease.^[9] Detrimental air, water, habitat, and seasons are considered ecologic and environmental causes of epidemics (*Janopadodhwansa* - the devastation of major cities), also found responsible for the collapse of early civilization.^{[11][12]} The abiotic determinants like, socio-economic conditions including income, education, occupation, other than environment and lifestyle, are relevant to contented life.

2.2. Concept of personal and public health in Ayurveda: public health through personalized health care

Ensuring the safety and quality of food, water, air, and general environment, preventing transmission of communicable diseases is an integral part of health protection in public health. An increase in life expectancy has been noted due to the improvements in public health. Community health care is a subdivision of public health care. It is expected to be affordable and applicable for large communities in long-term. The maintenance, protection, and improvement of health is largely obtained through medical care. Preventive measures, as per Ayurveda, mostly remain the same for the communities with commonalities like the same geographical area, climate, or age group, or similar cultural and religious habits or daily routines, or same food habits. Personal hygiene and behavior attain significance when people are in a role as a determinant. Concurrent to its individualistic approach, it also described standard health preservation protocols for the community. *Swasthavritta* is the code of conduct for health. It comprises chronobiological approaches like daily routines, seasonal routines, and non-pharmacological approaches like safety measures, exercises, and diet as a protective and curative measure. [Su. Sa. Uttara Tantra 64/3-5] [Su. Sa. Chikitsa sthana 24]^[5] *Sadvritta*, the code of ethics, comprises the guidelines for good conduct, maintaining mental health, and cultivate social and interpersonal behavior.^[13]

Fig. 1. Interdependence of personal and community health.



2.3. Limitations for Ayurveda in public health: Ayurveda with its host-centric approach can provide preventive community health care, based on the common abiotic health determinants, to support the contemporary medical care in public health. Compared to allopathy OPD practice, *Prakriti, Sarata, Agni*, etc. are time-consuming procedures, and disease-specified panchakarma treatments require multiple visits. Accessible and affordable medicines are circumstantial. E.g., freshly prepared decoctions at home are affordable but expensive in tablet form. Decoctions in the tablet form are palatable, and homework (time and energy) saver. However, may compromise the efficacy by modifying the mode of action that may lengthen the treatment. Easily accessible medicines and homemade formulations are often disregarded as home remedies, despite their efficacy.^{[14] [15]} Also, certain medications need prior purification treatments. The time-dependent treatments and the OPD mindset affect the patients' willingness in a public health set-up. Also, the Non-availability of trained attendants, set-up for panchakarma treatment, and preparation of medicines are few other overlooked challenges for mainstreaming Ayurveda in public health care.^{[16] [17]}

3. Practicability of the Ayurvedic principles in the present era:

The world is exploring concept of immunity and means for preservation of health. Ayurveda describes time-tested preventive concepts, that are established on the strong fundamental principles. The technologically developed medical world always raises the question about the

applicability of these age-old science principles. Furthermore, on the other hand, divergent from its basic concepts uses its knowledge as a ‘data bank’ to find out the new molecule.^[18-20] With a rapidly changing lifestyle and the new norms of life, modified but uniform Ayurvedic strategies without affecting basic principles are obligatory.

3.1. New norms of few health determinants need to reconsider:

The new norms of the current lifestyle should be reevaluated or redefined for a better understandings of pathogenesis.

Habitat – transitional habitat, staying in skyscrapers, congested living with lack of sunlight.

Season –artificial indoor living mimicking to the prewinter season, frequent traveling to contrast climates.

Strength – confusion between fitness and strength, immunity, and strength.

Age – early puberty, decreased health span, epigenetics.

Psychic - gender dysphoria, depression, dementia, Alzheimer.

Habituation - nightlife, shift duties, occupational adaptations.

Diet - ready to eat food, self-titled healthy food, global food habits, countless diet plans like protein diet, keto diet, paleo diet, etc.

Sexual life– homosexuality, bisexuality problems, late marriages.

Diseases – barotrauma, lifestyle diseases, pediatric non-communicable diseases, occupational diseases like computer vision syndrome, etc.

3.2. Incorporation of Ayurvedic health concept in day to day life:

Effective health promotion requires various players to focus on multi-sectoral approaches. Also, different socio-economic parameters need different strategies on rural, urban, and global levels. Accessibility, economic accessibility (affordability), and information accessibility will be essential for better absorption of the Ayurvedic health concepts on a large scale.^[9] Non-drug therapies, adoption of health behavior, increase self-awareness, and self-conditioning to reduce drug dependency, are the few objectives of preventive health care to lessen the economic burden. Promoting healthy traditions like daily home fumigation, household cleaning before seasonal festivals, and natural way of water purification are examples of the costless preventive

measurements that need modifications.^{[21] [22]} Original Sanskrit words are more nearing to every Indian language. Like Yoga, promoting Ayurvedic health concepts without translating original Sanskrit words is more comprehending, furthermore, assign Indian authenticity.

3.2.1. Self-assessment tools: Self-assessment mainly increases self-realization and active participation at a personal level in preventive and protective care. Individualistic knowledge of *prakriti* (biological and psychological), *sarata*, *agni*, strength (*bala*), exercise capacity, personalized yoga, etc. is important. It engages and empowers individuals and communities to choose healthy behaviors, and make according changes to reduce disease occurrence. It also helps to check health-related fitness and skill-related fitness like sports.^[23-29]

3.2.2. Health literacy for community awareness: Health literacy is getting familiar with and understanding the health information and services to make exemplary health decisions. Propagation with the support of the primary care providers, teachers, sociologists, and grass-root level health workers in the rural area is needed. Inclusion of code of conduct, code of ethics, and importance of non-suppressible and suppressible natural urges in primary education is a requisite. Also, the introduction of medicinal plants, medicinal use of spices, the importance of appropriate cooking, chronobiological effects, and behavioral changes are crucial things to be known from the beginning. Inclusion of basic ayurvedic health concepts in education with the help of group discussions, role play, counseling, interview and a support group will help build healthy habits right from the school age. A disaster plan program inclusive of Yoga and other therapies can expand social dimensions for coping disasters to reduce fear, anxiety, and losses.

Awareness increases through information and education. Whereas, self-awareness develops through personal experience and introspection. Informative software or easily operatable apps for introspection can be used effectively. Official promotion from authorized sectors will ensure the quality, uniformity, and trustworthiness of these online promotions like self-assessment tools, gadgets/ software/ apps, etc., for recognition.

Habituation of the ayurvedic lifestyle: Getting familiar with Ayurvedic concepts can be done in various ways. To increase illness awareness, months can be promoted as ‘*Shodhana*’ (cleansing) months, or *vamana/ virechana/ Basti* / blood donation month, and days as castor oil day of the week, etc. Self-assessment can be called the horoscope of health. Seasons can be promoted for peculiarity like winter season as ‘*Balya*’ (health building) and summer as ‘*Satarka*’ (health cautious) season, rainy season as ‘*mitahar*’ (need fasting-mimicking diet) season, etc.

Apps like ‘*Bramha muhurta*’ alarm according to the sunrise, personalized Yoga instructions, providing country/state/ city wise daily and seasonal routines, personalized food recommendations as per *Agni*, climate, and territory, proposed diet plan with locally available food before travel, also *prakriti* based daily and seasonal regimen to cope sudden change of the climate for national or international travelers will promote healthy behavior in day to day life.^[28] Mobile games to promote code of conduct and ethics for kids.

Dietetics: In urban culture, hoteling has become an integral part of life. Ayurvedic food restaurants, eateries, or diet restaurants is a welcoming idea, but presenting the authentic ‘*yusha*’ and ‘*yavagu*’ to the list of soups, season-wise and age-wise unique recipes, ‘*panchakola* or *usheera*’ blended water on the menu of every restaurant, will be a healthy and more approaching alternative. Communication and activities are the two important methods for public awareness. Promotion of food as medicine, significance of personalized nutrition, appropriate preparation and processing methods, food for a healthy recovery, redefining of traditional, and seasonal festive healthy food culture is necessary. Food festivals give a chance to taste and judge which can be achieved through organizing specialty food festivals like ‘*dhatu sarata*’ (tissue-specific) food festival, ‘*Rasayana*’ (rejuvenating) food festival, ‘*medhya*’ (brain power boosting) food festival, etc. Provision and promotion of ready-to-eat Ayurvedic nutraceuticals and functional food in hospitals, daycares, old age homes, companies, gymnasiums, sports academies, maternity homes, home quarantine patients, and schools is an affordable and easily acceptable healthy option.^[30-34]

3.2.3. Communication: Communication was the most ancient relict used for original awareness of health preservation. Currently, visual communication made the world small and made it very easy to get virtually connected. Medical illustration, Telemedicine, webinar, etc. can be used efficiently and effectively in remote areas and globally.

3.2.4. Specialty clinics: The multiplied lifestyle disorders of the present era need comprehensive management. These can provide vocational guidance, yoga guidance, workplace ergonomics according to *prakriti*, guidance for healthy aging, mental, cognitive, and spiritual health care, diet and behavior counseling according to psychological constitution, etc.^[28] Acute diseases and deaths are transited into chronic diseases and leading to a diseased or disabled life. Restoration clinics or *Rasayana* clinics, besides palliative care and rehabilitation after significant illnesses will also ensure healthy recovery to prevent recurrence. *Vajikarana* (revitalize) clinics and epigenetic clinics for genetic issues etc.^{[13][35-38]}

3.2.4. Agriculture: Education and promotion of agricultural practices like an authentic way of making ghee, butter, ‘*asava*, and *arishta*’ to the farmers to increase availability with cost reduction. For a better environment, encouragement to use the biofertilizers like ‘*panchgavya*’, promoting inexpensive natural fumigation (*dhoopana*), and natural purification of water techniques is necessary.^{[21] [22] [39]} For the promotion of the plantation, medicinal plants, with their health significance, can be provided in the schools, colleges, to the villagers, for every house, for terrace garden, alongside the roads and in public gardens, etc.

3.2.4. Health card: Digitally linked family health card proposed by National Health Policy (2017), besides providing the illness history, also need to provide the information about the Ayurvedic self-assessed examinations at regular intervals for prevention, prediction, and restoration of the diseases.

4. Understanding the prevention and protection of health through Ayurveda:

Ayurvedic protocols for health preservation can be described in four divisions. First, prevention of the occurrence of disease in a healthy population. Second, maintaining and protecting the health of the population with risk factors. Third, management and prevent relapse of disease with the specific treatment, and fourth, restoration of health to prevent recurrence and reoccurrence of the disease. It also includes maintaining the health of the diseased or disabled life by slowing deterioration. Relapse is deterioration after temporary improvement but before the recovery, while deterioration more than one occasion after recovery is a recurrence of the disease. Prevention includes all the probable causes affecting health, but protection is generally targeted. Endogenous diseases can be avoided through code of conduct, seasonal *panchakarma* and *rasayana*, and *vajeekarana*, while exogenous diseases can be avoided through code of ethics, socio-ecologic awareness, and healthy choices.^{[40][13]} *Rasayana* and *Panchakarma* treatments have a role in all the health preservation stages of prevention, protection, and longevity.^[41-43] The healthy middle-age purified (*shodhana*) individuals, following the health guidelines, can do rejuvenation treatments to enhance the health further. Diseases demonstrate the reciprocal impact on body, mind, and chronobiological conduct at different stages.

Health preservation protocol.

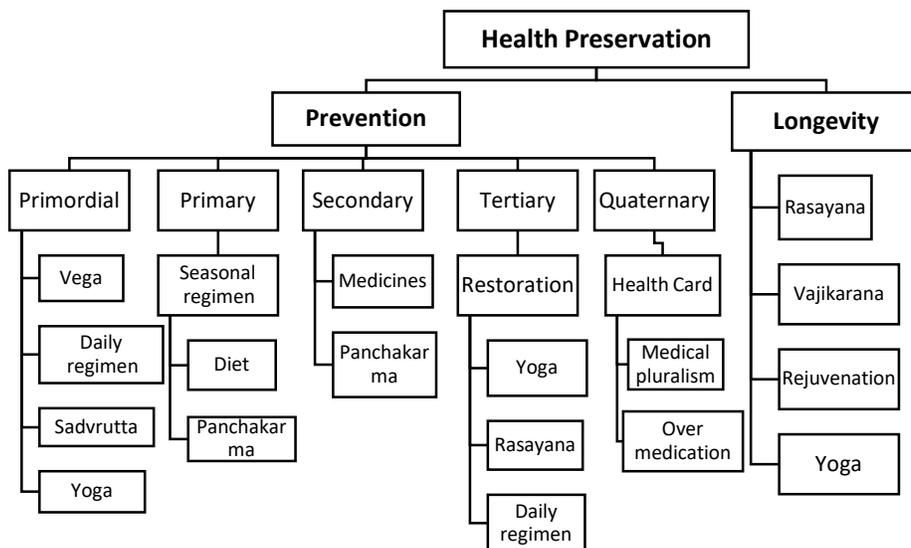
Diseases -	Physical	Psychological	Chronobiological
Main causes -	<i>Asatmendriyartha samyog*</i>	<i>Pragyaparadha**</i>	<i>Parinama***</i>
Prevention -	<i>Swasthavritta, yoga</i>	<i>Sadavritta, yoga</i>	Seasonal <i>panchakarma</i>
Protection -	<i>Dhatusamy Chkitsa (disease-specific)</i>	<i>Satvavajay Chikitsa (psychotherapy)</i>	Disease-specific <i>panchakarma</i>
Maintenance of health -	Daily <i>Rasayana, yoga</i>	<i>Medhya(nootropic) Rasayana, yoga</i>	<i>Naimittik(specific) Rasayana, yoga</i>

(*Improper conduct, **unethical behavior, ***periodic transformation)

6. Model health care system with contemporary concepts of health care–

The time to time, recommended government policies and the recent ‘The National Rural Health Mission’ (NRHM) policy for mainstreaming Ayurveda should focus on the systematic preventive aspect of Ayurveda. The research papers from the compendium ‘Ayurveda in public health’, published by CCRAS in 2018, also projected the treatment part, not the preventive aspect.^[44]

Fig. 2. Health preservation through Ayurveda with contemporary concepts of health care.



Primordial prevention comprises comprehensive health determinants and community involvement, inclusive of all non-drug therapies like self-management programs using self-assessment tools, a healthy lifestyle, and food as medicine, home health care. [13] [45] It will also embrace modified healthy traditions and festivals. Primary prevention seeks to prevent the onset of specific seasonal susceptible diseases via risk reduction by altering behaviors, diet, and seasonal purification therapies for enhancing disease resistance. Secondary prevention includes drug-based interventions and therapies to control subclinical and clinical disease progression. [13] [45] [46]

Screening procedures using diagnostic science and tenfold examination for early interventions are cost-effective for endogenous diseases. Tertiary prevention seeks restoration of health, longevity, improving quality-of-life, taking care of recurrence, and improving patients' strength and immunity to accommodate disability through palliative care and healthy aging plans to increase life span. [41] Quaternary prevention is to identify the patients at risk of over-medicalization due to the pluralism of therapies, misemploying panchakarma treatment, and protecting from new medical consequences due to the pluralism of drugs. [46] [47]

6.1. Paradigm of Ayurveda in public health care:

India's present health care system is mainly operating on three levels, primary, secondary, and tertiary. The primary level includes sub-centers mostly run with the help of health workers and PHC (primary health care centers) for primary preventive, curative treatments in addition to health care promotion. Ayurveda at the primary level can effectively provide preventive care with proposed diet plans, seasonal routines, tissue enhancement diet, prenatal and postnatal routines with the assistance of health workers. At PHC level, adjacent to curative allopathy treatment ayurvedic specialized care can be given with an integrative approach. This can help to prevent recurrence and relapse of the disease. This can be helpful in management of drug-resistant diseases, and for minimizing the side-effects. It can be promotive to health in periconceptional tissue-specific care. The *vajeekarana* treatment can be utilized in health restoration. [48-52]

The secondary level provides expert consultation by respective specialists at CHC (community health centers) and local hospitals. However, at the secondary level, ayurvedic disease-specific curative treatments should be given in a detached set-up because of the conceptual differences of both the sciences. [16] [18]

District hospitals and medical colleges are at the tertiary level. Here, in an outpatient shared set-up, as per the set protocol, the patients unable to distinguish between the medical systems will be

directed to the specific medical system. An integrative approach can be followed as per the circumstances, acute conditions, and for certain pre-and post-surgical cases.^{[17] [53-55]} Stand-alone Ayurvedic critical care units at the tertiary level will be supervised either by respective allopathic or specialized Ayurvedic professionals. The provision of Ayurveda in the advance directives (legal documents to declare the type of treatment the patient wants when ill) is a requisite for the synergistic confluence.

6.2. Improvising the integral segments of a modal health care system:

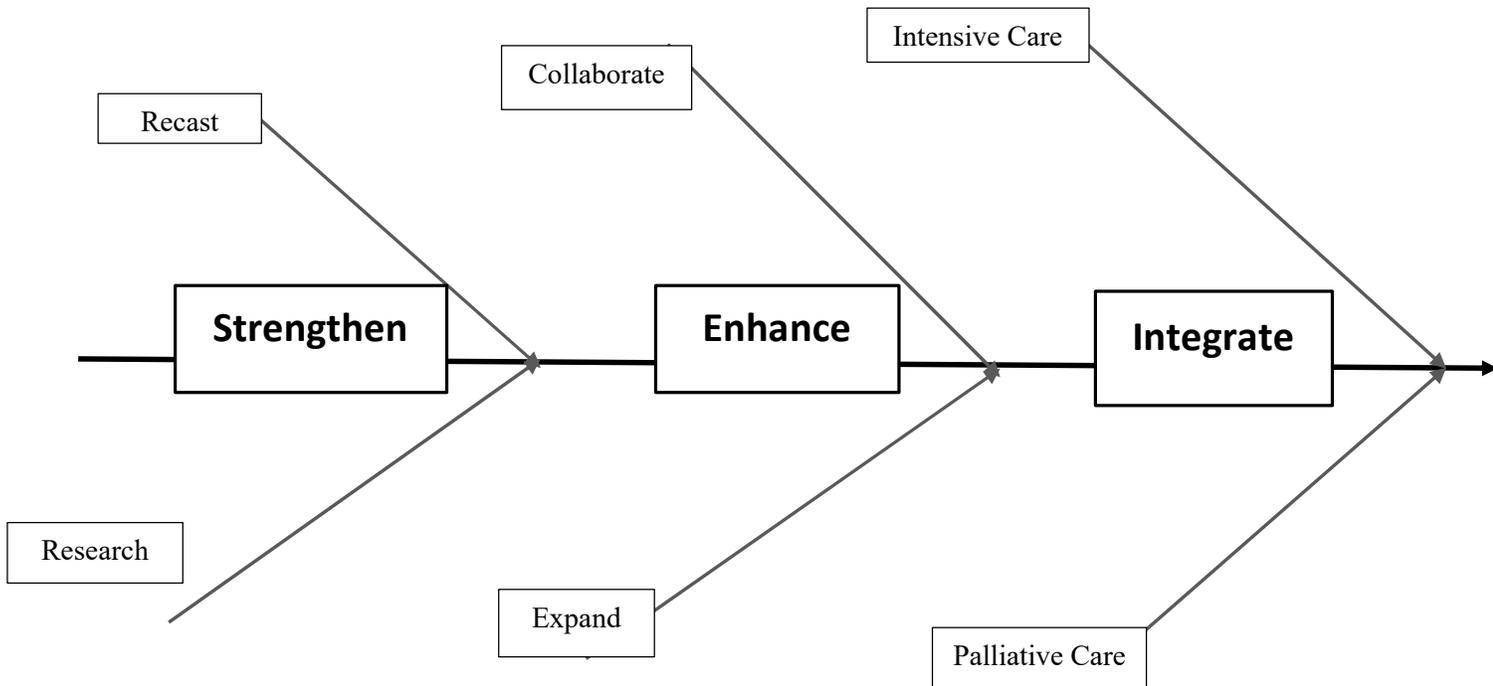
Health providers, medicines, attendant/ support group, patient, diseases, and *kriyakaal* (six stages of disease progression), are the integral segments of the health care system, described as *Padchtushtaya* and *Beejachtushtaya*. [A. H. Sutra Sthana 1/27]^[7] [Su. Sa. Sutra Sthana 1/38]^[6] The four-level prevention strategy already comprises three segments, *viz.* diseases, their six stages, and a health concerned patient. (fig.2). The remaining segments need to take up various other factors. As a citizen of the world, Ayurvedic physician expected to be proficient in contemporary diagnostic science and lifesaving skills, besides all the eight disciplines of Ayurveda. Ayurvedic medicines are attracting the workers and the profit-making markets through network pharmacology. Modifications without compromising the efficacy of the medicines, innovative sterilized packaging like topical applications in tetra packs, simple dusting powders, medicinal oil/ ghee suppository vaginal capsules are more necessary than Ayurvedic soaps, shampoos, cough syrups, etc.

The attendant's expanded definition includes kinesis therapists, pathologists, and trained paramedics familiar with the concepts of Ayurveda, for managing palliative care, hospice care, yoga training, etc.

7. Future strategies:

Future strategy for health preservation through Ayurveda needs to encompass every factor contributing to health for the propagation of Ayurveda, including the marketing strategy of pharma companies. The social, economic, environmental, agricultural, and cultural contributions of Ayurveda also should be taken care. An interdependent three-stage plan is crafted to create a profound platform for the community and global approach of Ayurveda.

Fig. 3. Future Strategy



Strengthen: Refined education and value-added research is the elementary step for corroborating other approaches.

Recasting of the education system: skill up-gradation, increased employment with equal opportunities should be given the priority for assertiveness of Ayurvedic physicians. Integrated post-graduation studies in Ayurvedic psychiatry, psychology, nutrition, intensive care, epigenetics, etc. are requisites.

Similarly, a **recasting** of the health literacy policy with Ayurvedic health principles is required to influence the community's thinking and craft a global mindset.

Research: Dissemination of Ayurvedic knowledge through research to prove the potency and to work on the same platform with contemporary science at a global level is a necessity. An interdisciplinary approach with innovative teams, researches related to Social sciences in medical anthropology, cultural studies, linguistics philosophy, cognitive science, economics, demography, development studies, geography, and environmental studies are also necessary to support the fundamentals.

Recasting the outline of research work is necessary for value addition. E.g., instead of mandatory postgraduate publications, the online contribution of compilations in a repository at undergraduate and postgraduate level will provide a reliable source for research workers, mandatory cross-disciplinary research at postgraduate and Ph.D. level will improve mutual understanding. With just 50% response, approximately twelve thousand compilations will be submitted online at one place. There will be approximately two thousand cross-disciplinary research for publication. Out of 4,28,884 registered practitioners, *prakriti* assessment records from only 15% of practitioners can provide large-scale data for prospective and observational studies.^[44]

Enhance: After strengthening the fundamentals, qualitative and quantitative boosting through collaboration and expansion is the second step.

Collaborate: Besides health care industry, collaboration with meteorology, climatology branches of atmospheric science for chronobiological effects, food industry to know the processing, preservation, conservation techniques, agriculture industry for the conservation of medicinal plants through tissue culture, terrace, and vertical farming, etc. is essential for overall up-gradation. Alliance with complementary therapies like acupressure therapy, physiotherapy, recreational therapy, music therapy, fragrance therapy will help the restoration stage.

Expand: Introduction of Ayurveda in auxiliary education branches like nursing schools, paramedical training institutes will be resourceful. Utilizing Ayurveda in agriculture and animal husbandry will open up new doors. ^[56-58]

Integrate: With the help of transdisciplinary research, Ayurvedic physicians with lifesaving skills, and trained paramedics, execution of an active role in critical care and palliative care, including cardiac rehabilitation, pulmonary rehabilitation, cognitive rehabilitation, is possible.

Creating an independent, parallel future healthcare system of Ayurveda is possible with time-bound goals and increasing public and global healthcare approaches.

•••

References:

1. Robbins Schug G, Blevins KE, Cox B, Gray K, Mushrif-Tripathy V. Infection, disease, and biosocial processes at the end of the Indus Civilization. *PLoS One*. 2013;8(12):e84814. doi:10.1371/journal.pone.0084814
2. Lee SJ, Park SH, Cloninger CR. *et al.* Biopsychological traits of Sasang typology based on Sasang personality questionnaire and body mass index. *BMC Complement Altern Med* **14**, 315 (2014). <https://doi.org/10.1186/1472-6882-14-315>
3. Watanabe K, Matsuura K, Gao P, Hottenbacher L, Tokunaga H, Nishimura K, *et al.* Traditional Japanese Kampo Medicine: Clinical Research between Modernity and Traditional Medicine—The State of Research and Methodological Suggestions for the Future. *Evid Based Complement Alternat Med*. 2011; 2011: 513842. doi: 10.1093/ecam/neq067
4. Shin S, Kim YH, Hwang MW. Diagnosis and treatment principle in *Sasang* medicine: original symptom. *Integr Med Res*. 2016 Jun; 5(2): 99–104. doi: 10.1016/j.imr.2016.03.005
5. Sushruta Samhita, Sutrasthana, Doshadhatumala vidyaneeya Adhyaya, 15/41. Available from: <http://niimh.nic.in/ebooks/esushruta> (Accessed on 14th October 2020)
6. Charaka Samhita, Sutrasthana, Khuddakachatushpadiya Adhyaya, 9/4. Available from: <http://niimh.nic.in/ebooks/ecaraka> (Accessed on 14th October 2020)
7. Vagbhata. Sarth Vagbhata. Sutrasthana, Cha. 1 Ayushkameeya Adhyaya verse 20. Translated from Sanskrit by Garde G., 7th ed. Pune: Ramesh Raghuvanshi; 1983.pp.4.

8. Svalastog AL, Donev D, Jaren Kristoffersen N, Gajović S. Concepts and definitions of health and health-related values in the knowledge landscapes of the digital society. *Croat Med J*. 2017;58(6):431-435. doi:10.3325/cmj.2017.58.43
9. Kumar S, Preetha G. Health promotion: an effective tool for global health. *Indian J Community Med*. 2012;37(1):5-12. doi:10.4103/0970-0218.94009.
10. Galderisi S, Heinz A, Kastrup M, Beezhold J, Sartorius N. Toward a new definition of mental health. *World Psychiatry*. 2015;14(2):231-233. doi:10.1002/wps.20231
11. Bhatia A, Pal R. Impact of Antarctica winters on vital parameters and anthropometric variables. [Travel Medicine and Infectious Disease](#). 2013;11(3). doi: [10.1016/j.tmaid.2013.02.005](#)
12. Chen M, Hao Y, Hwang KL, Wang, Wang L. Disease Prediction by Machine Learning Over Big Data From Healthcare Communities. *IEEE Access*. 2017;5:8869-8879. doi: 10.1109/ACCESS.2017.2694446
13. Rao RV. Ayurveda and the science of aging. *J Ayurveda Integr Med*. 2018;9(3):225-232. doi:10.1016/j.jaim.2017.10.002
14. Dudhamal TS, Gupta SK, Bhuyan C. Role of honey (Madhu) in the management of wounds (Dushta Vrana). *Int J Ayurveda Res*. 2010;1(4):271-273. doi:10.4103/0974-7788.76793
15. Singh A, Singh AK, Narayan G, Singh TB, Shukla VK. Effect of Neem oil and Haridra on non-healing wounds. *Ayu*. 2014;35(4):398-403. doi:10.4103/0974-8520.158998
16. Mallick S. Challenges of mainstreaming: Ayurvedic practice in Delhi Government health institutions. *J Ayurveda Integr Med*. 2016;7(1):57-61. doi:10.1016/j.jaim.2015.10.001
17. Harini JA, Luthra A, Madeka S, Shankar P, Mandava P, Pervaje R, et al. Ayurvedic Treatment of Acute Ischemic Stroke: A Prospective Observational Study. *Global advances in health and medicine* 2019; 8:2164956119849396. <https://doi.org/10.1177/2164956119849396>
18. Jayasundar R, Ghatak S, Makhdoomi MA, Luthra K, Singh A, Velpandian T. (2019). Challenges in integrating component level technology and system level information from Ayurveda: Insights from NMR phytometabolomics and anti-HIV potential of select Ayurvedic medicinal plants. *Journal of Ayurveda and integrative medicine*. 2019; 10(2): 94–101. <https://doi.org/10.1016/j.jaim.2017.06.002>

- 19.** Nag M, Kar A, Chanda J, Mukherjee PK. RP-HPLC analysis of methanol extract of *Viscum articulatum* – A plant from Ayurveda. *J Ayurveda Integr Med.* 2019;S0975-9476(17)30476-X. doi:10.1016/j.jaim.2018.02.135
- 20.** Mishra R, Sharma S, Sharma RS, Singh S, Sardesai MM, Sharma S, Mishra V. *Viscum articulatum* Burm. f. aqueous extract exerts antiproliferative effect and induces cell cycle arrest and apoptosis in leukemia cells. *J Ethnopharmacol.* 2018 Jun 12;219:91-102. doi:10.1016/j.jep.2018.03.005. Epub 2018 Mar 16. PMID: 29555410.
- 21.** Bhatwalkar SB, Shukla P, Srivastava RK, Mondal R, Anupam R. Validation of environmental disinfection efficiency of traditional Ayurvedic fumigation practices. *J Ayurveda Integr Med.* 2019;10(3):203-206. doi:10.1016/j.jaim.2019.05.002
- 22.** Sudha VB, Ganesan S, Pazhani GP, Ramamurthy T, Nair GB, Venkatasubramanian P. Storing drinking-water in copper pots kills contaminating diarrhoeagenic bacteria. *J Health Popul Nutr.* 2012;30(1):17-21. doi:10.3329/jhpn.v30i1.11271
- 23.** Mobeen F, Sharma V, Prakash T. Functional signature analysis of extreme Prakriti endophenotypes in gut microbiome of western Indian rural population. *Bioinformation.* 2019;15(7):490-505. doi:10.6026/97320630015490.
- 24.** Gunawat CP, Singh G, Patwardhan K, Gehlot S. Weighted mean: A possible method to express overall Dhatu Sarata. *J Ayurveda Integr Med.* 2015;6(4):286-289. doi:10.4103/0975-9476.172386.
- 25.** Singh A, Singh G, Patwardhan K, Gehlot S. Development, Validation, and Verification of a Self-Assessment Tool to Estimate Agnibala (Digestive Strength). *J Evid Based Complementary Altern Med.* 2017;22(1):134-140. doi:10.1177/2156587216656117
- 26.** Cramer MN, Bain AR, Jay O. Local sweating on the forehead, but not forearm, is influenced by aerobic fitness independently of heat balance requirements during exercise. *Exp Physiol.* 2012;97(5):572-582. doi:10.1113/expphysiol.2011.061374.
- 27.** Doddoli S, Shete S, Kulkarni D, Bhogal R. Effect of yoga training on lipid metabolism in industrial workers with reference to body constitution (*Prakriti*). *J Tradit Complement Med.* 2016;7(3):322-326. doi:10.1016/j.jtcme.2016.08.001.

- 28.** Jadhav S, Waghulade H. Yoga as a Preventive Health Care according to Prakriti: A critical study. *J of Ayurveda and Holistic Medicine (JAHM)*.2019; 7(4): 38-56.
- 29.** Ram Manohar P, Sorokin O, Chacko J, Nampoothiri V. An exploratory clinical study to determine the utility of heart rate variability analysis in the assessment of dosha imbalance. *J Ayurveda Integr Med*. 2018;9(2):126-130. doi:10.1016/j.jaim.2017.06.008.
- 30.** Kaur G, Invally M, Khan MK, Jadhav P. A nutraceutical combination of Cinnamomum cassia & Nigella sativa for Type 1 diabetes mellitus. *J Ayurveda Integr Med*. 2018;9(1):27-37. doi:10.1016/j.jaim.2017.02.005.
- 31.** Shukla K, Dwivedi M, Kumar N. Pharmaceutical preparation of Saubhagya Shunthi Churna: A herbal remedy for puerperal women. *Int J Ayurveda Res*. 2010;1(1):25-29. doi:10.4103/0974-7788.59940.
- 32.** Banerjee S, Debnath P, Debnath PK. Ayurnutrigenomics: Ayurveda-inspired personalized nutrition from inception to evidence. *J Tradit Complement Med*. 2015;5(4):228-233. Published 2015 Mar 24. doi:10.1016/j.jtcme.2014.12.009.
- 33.** Devarajan A, Mohanmarugaraja MK. A Comprehensive Review on *Rasam*: A South Indian Traditional Functional Food. *Pharmacogn Rev*. 2017;11(22):73-82. doi:10.4103/phrev.phrev_13_17.
- 34.** Pandey MM, Rastogi S, Rawat AK. Indian traditional ayurvedic system of medicine and nutritional supplementation. *Evid Based Complement Alternat Med*. 2013;2013:376327. doi:10.1155/2013/376327.
- 35.** DuBroff R, Lad V, Murray-Krezan C. A Prospective Trial of Ayurveda for Coronary Heart Disease: A Pilot Study. *Altern Ther Health Med*. 2015;21(5):52-62.
- 36.** Manjunath NK, Telles S. Influence of Yoga and Ayurveda on self-rated sleep in a geriatric population. *Indian J Med Res*. 2005;121(5):683-690.
- 37.** Hegde D, Bhargav PH, Bhargav H, Babu H, Varsha KA, Raghuram N. Feasibility and Pilot Efficacy Testing of Integrated Yoga and *Shirodhara* (Ayurvedic Oil-Dripping) Intervention on Clinical Symptoms, Cognitive Functions and Sleep Quality of Adults with Anxiety Disorder. *Int J Yoga*. 2020;13(1):32-41. doi:10.4103/ijoy.IJOY_44_19.

38. Kanherkar RR, Stair SE, Bhatia-Dey N, Mills PJ, Chopra D, Csoka AB. Epigenetic Mechanisms of Integrative Medicine. *Evid Based Complement Alternat Med*. 2017;2017:4365429. doi:10.1155/2017/4365429
39. Sayi DS, Mohan S, Vinod Kumar K. Molecular characterization of a proteolytic bacterium in Panchagavya: An organic fertilizer mixture. *Journal of Ayurveda and integrative medicine*. 2018; 9(2): 123–125. <https://doi.org/10.1016/j.jaim.2017.04.007>
40. Amin H, Sharma R. Nootropic efficacy of Satvavajaya Chikitsa and Ayurvedic drug therapy: A comparative clinical exposition. *Int J Yoga*. 2015;8(2):109-116. doi:10.4103/0973-6131.158473.
41. Bhati H, Manjusha R. Clinical study on evaluation of anti-cataract effect of Triphaladi Ghana Vati and Elaneer Kuzhambu Anjana in Timira (immature cataract). *Ayu*. 2015;36(3):283-289. doi:10.4103/0974-8520.182762.
42. Tillu G, Chaturvedi S, Chopra A, Patwardhan B. Public Health Approach of Ayurveda and Yoga for COVID-19 Prophylaxis. *J Altern Complement Med*. 2020;26(5):360-364. doi:10.1089/acm.2020.0129
43. Sharma R, Martins N. (2020). Telomeres, DNA Damage and Ageing: Potential Leads from Ayurvedic Rasayana (Anti-Ageing) Drugs. *Journal of clinical medicine*.2020; 9(8): 2544. <https://doi.org/10.3390/jcm9082544>
44. Chandra S, Patwardhan K. Allopathic, AYUSH and informal medical practitioners in rural India - a prescription for change. *Journal of Ayurveda and Integrative Medicine*. 2018 Apr - Jun;9(2):143-150. DOI: 10.1016/j.jaim.2018.05.001.
45. Baragi UC, Vyas MK. Evaluation of diet and life style in the etiopathogenesis of Urdhwaga Amlapitta (non-ulcer dyspepsia). *Ayu*. 2013;34(4):352-355. doi:10.4103/0974-8520.127705.
46. Pandve HT. Quaternary Prevention: Need of the Hour. *J Family Med Prim Care*. 2014 Oct-Dec; 3(4): 309–310. PMID: 25657934
47. Shafiq N, Gupta M, Kumari S, Pandhi P. Prevalence and pattern of use of complementary and alternative medicine (CAM) in hypertensive patients of a tertiary care center in India. *Int J Clin Pharmacol Ther*. 2003;41(7):294-298. Doi:10.5414/cpp41294

- 48.** Agrawal S, Verma V, Gehlot S. Explication on tissue nutrition in prenatal and postnatal life: An Ayurveda perspective. *Journal of Ayurveda and Integrative Medicine*. 2020 Aug. DOI: 10.1016/j.jaim.2020.05.002.
- 49.** Prakash B, Parikh PM, Pal SK. Herbo-mineral ayurvedic treatment in a high risk acute promyelocytic leukemia patient with second relapse: 12 years follow up. *J Ayurveda Integr Med*. 2010;1(3):215-218. doi:10.4103/0975-9476.72618
- 50.** Manoraj A, Thevanesam V, Bandara BMR, Ekanayake A, Liyanapathirana V. Synergistic activity between Triphala and selected antibiotics against drug resistant clinical isolates. *BMC Complement Altern Med*. 2019;19(1):199. Published 2019 Aug 2.
doi:10.1186/s12906-019-2618-1
- 51.** Maliyakkal N, Appadath Beeran A, Balaji SA, Udupa N, Ranganath Pai S, Rangarajan A. Effects of *Withania somnifera* and *Tinospora cordifolia* extracts on the side population phenotype of human epithelial cancer cells: toward targeting multidrug resistance in cancer. *Integr Cancer Ther*. 2015;14(2):156-171. doi:10.1177/1534735414564423
- 52.** Mangwani N, Singh PK, Kumar V. Medicinal plants: Adjunct treatment to tuberculosis chemotherapy to prevent hepatic damage [published online ahead of print, 2019 Oct 31]. *J Ayurveda Integr Med*. 2019;S0975-9476(18)30705-8. doi:10.1016/j.jaim.2019.02.004
- 53.** Bharati PL, Agrawal P, Prakash O. A case study on the management of dry gangrene by *Kaishore Guggulu*, *Sanjivani Vati* and *Dashanga Lepa*. *Ayu*. 2019;40(1):48-52.
doi:10.4103/ayu.AYU_244_18
- 54.** Kishore RK, Abhishekh HA, Udupa K, et al. Evaluation of the influence of ayurvedic formulation (Ayushman-15) on psychopathology, heart rate variability and stress hormonal level in major depression (Vishada). *Asian J Psychiatr*. 2014;12:100-107.
doi:10.1016/j.ajp.2014.07.002
- 55.** Butt AM, Ismail A, Lawson-Smith M, Shahid M, Webb J, Chester DL. Leech Therapy For The Treatment Of Venous Congestion In Flaps, Digital Re-Plants And Revascularizations - A Two-Year Review From A Regional Centre. *J Ayub Med Coll Abbottabad*. 2016;28(2):219-223.

- 56.** Oburai NL, Rao VV, Bonath RB. Comparative clinical evaluation of Boerhavia diffusa root extract with standard Enalapril treatment in Canine chronic renal failure. *J Ayurveda Integr Med.* 2015;6(3):150-157. doi:10.4103/0975-9476.166390
- 57.** Saeed M, Naveed M, Leskovec J, et al. Using Guduchi (*Tinospora cordifolia*) as an eco-friendly feed supplement in human and poultry nutrition. *Poult Sci.* 2020;99(2):801-811. doi:10.1016/j.psj.2019.10.051
- 58.** Yurdakok-Dikmen B, Turgut Y, Filazi A. Herbal Bioenhancers in Veterinary Phytomedicine. *Front Vet Sci.* 2018;5:249. Published 2018 Oct 10. doi:10.3389/fvets.2018.00249