



IMMUNO-MODULATION THROUGH AYURVEDIC LIFESTYLE WITH SPECIAL REFERENCE TO DINCHARYA AND RITUCHARYA

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Abstract

Ayurveda or science of life is known to have provided an individual with guidelines to maintain by means of following *ritucharya* (seasonal regime) and *dincharya* (daily regime). In recent times, as the incidences of pandemics like Covid-19 and other viral disorders have increased; so in the absence of absolute therapies, a need to enhance the immune response of individual to make them less susceptible for the same is there. The practices of following daily as well as seasonal regime along with herbs not only help in modulation of immune response but also improve the quality of *dhatu*s (structural components of body) of a person. In individuals with extreme age or co morbidities, use of *rasayana* drugs sidewise can make them less susceptible to the related disorders. An attempt to highlight importance of *dincharya* (daily regime) and *ritucharya* (seasonal regime) measures in immune-modulation with probable mode of action is made objective of this article.

Key words: *Ayurveda*, Covid-19, *dincharya*, *ritucharya*, immune-modulation

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INTRODUCTION

Health sciences are a boon to mankind with which his predominance in society pertaining to sharing knowledge and longevity is maintained. Human being, a dominant force in food chain is also exposed to a great deal of micro organisms some of which can threaten his epitome. Viruses, a group of such organisms are making them a source of concern with risk of pandemics every now and then. SARS, MERS, Ebola and now COVID 19 are results of this dreadful fraternity being dominant. Each individual is susceptible to an infection by any of these viruses on exposure but a group of people having compromised immune system are at greater risk. Prevalence to a particular age, sex and associated disorders has also been noted. In order to maintain health so that these diseases could not afflict the individual; certain rules have been advocated daily as well as in seasonal routine. These routine involves certain rules like getting up early in *brahma muhurat*, *snana* (bathing), *abhyanga* (massage) and *nasya* (oil administration through nasal passage) etc. are the daily procedures for maintenance of health through regular modulation of immunity. *Ayurveda*, the traditional indian medicinal system also highlights particular seasons when body is susceptible to particular type of disorders. This periodic change in

prevalence to a particular disorder is seen throughout the year which can be checked by bio-purification procedures and following dietary and behavioral modifications according to seasons i.e. *ritucharya* (seasonal regime). *Ayurveda* primarily is in belief of prevention is better than cure and prioritizes prevention over treatment also. The doctrines have conceptualized the immune mechanisms by various names as *agni*, *prakrit bala* and *ojas*. Apart from this, use of *rasayana* drugs (rejuvenative therapy) is advised in order to further reduce body's sustainability to degenerative processes with pathogens and also to maintain the longevity e.g. *ritu haritaki*, *chyanprash*, *brahma rasayana* etc. Their importance in individuals of extreme of ages is specially advocated for proper growth and nutrition of the body.

AIMS AND OBJECTIVES

- Review of *ayurvedic* classical literature for context of *dincharya* (daily regime) and *ritucharya* (seasonal regime)
- To establish relation between immunity and *dincharya* (daily regime) with *ritucharya* (seasonal regime)
- Relationship of immunity with seasons

MATERIALS AND METHODS

Critical evaluation of *brihatrayi*, *laghutrayi* has been carried out for this purpose. Apart from this, various published

papers in national and international peer reviewed journals and magazines along with various websites and blogs have also been scrutinized.

Immunity enhancing steps in dincharya

***Brahma muhurta jaagaran*^[1](wake up early in Brahma muhurat)**

Classic doctrines of *ayurveda* stress upon various methods to stay healthy. *Ayurveda* advocates at rising early i.e. around the time before sun rises or in *brahma muhurat*. The

appropriate time or *kala* to acquire *brahma-gyan* (spiritual knowledge) is termed as *brahma-muhurat*.

According *Acharya* Shivanand, *brahma muhurat* is a period in morning hours between 3.30 AM to 5.30 AM.

According to *Swami* Gaurangpada, there are total 30 *muhurat* in 24 hrs with each *muhurat* of 48 minutes duration. *Brahma muhurat* is the period of 48 minutes, from 1 hr.36 minutes to 48 minutes before sunrises^[2]

Table no.1. Thirty muhurat in 24 hrs.duration

S.No.	Time	Muhurat name
1	6.00-6.48	Rudra,
	6.48-7.36	Ahi,
	7.36-8.24	Mitra
	8.24-9.12	Pitru
	9.12-10.00	Vasu
2	10.00-10.48	Vara
	10.48-11.36	Visva Deva
	11.36-12.24	Vidhi
	12.24-13.12	Satmukhi
	13.12-14.00	Puruhuta
3	14.00-14.48	Bvahini
	14.48-15.36	Naktancara
	15.36-16.24	Varuna
	16.24-17.12	Aryama
	17.12-18.00	Bhaga
4	18.00-18.48	Grisha
	18.48-19.36	Ajapad
	19.36-20.24	Ahirbudhnya
	20.24-21.12	Pusa
	21.12-22.00	Aswini

5	22.00-22.48	Yama
	22.48-23.36	Agni
	23.36-24.24	Bidhatr
	24.24-1.12	Canda
	1.12-2.00	Aditi
6	2.00-2.48	Jiba
	2.48-3.36	Vishnu
	3.36-4.24	Yamigadyuti
	4.24-5.12	Brahma
	5.12-6.00	Samudram

The basic principle stays at having a sound sleep and maintains the normal circadian cycle. *Brahma muhurat* is a specific time when one should awake to set and maintain the rhythm and pattern of his or her biological clock. Rising early in *brahma muhurat* has many benefits as it is the best time for maintenance of all physical, mental and spiritual activities of the body.

The classical phase markers for measuring the timing of a mammal's circadian rhythm are:

- Melatonin secretion by pineal gland
- Core body temperature
- Plasma level of cortisol

At about 5.00 AM i.e. 2 hours before habitual wake time, the average human adult's temperature reaches its minimum. Along with this, pineal gland which has been dubbed the "third eye" and "the seat of the soul" by Rene Descartes; secretes melatonin at night with a robust circadian rhythm and attains maximum plasma level at around 3 to 4

AM and then starts reducing gradually. The investigators have suggested the pineal gland and melatonin to be possibly associated with longevity^[3]. In a similar way, level of adrenal glucocorticoids which are the major modulators of multiple functions including energy metabolism, stress response, immunity and cognition; reach its peak at around 3 AM and gradually get lowered with time during day hours^[4]. So to maintain the proper circadian rhythm of these important hormones along with circadian rhythm of catecholamines, waking up in *brahma muhurat* is very much essential.

Achaman, Jihwa nirlektan evum Danta dhavan

Achaman means sipping of water. It is advised with water after getting up from bed. This should be followed by *danta dhavan* (brushing), *jihwa nirlektan* (scrapping of tongue) in order to perform daily oral hygiene activity. The purpose of these activities is to reduce the growth of micro organisms that

have occurred overnight. This not only cleans the mouth but also acts as a motivation for oral secretions which contains substance like lysozyme thereby enhancing pathogen neutralizing capacity of oral cavity^[5]. The act of brushing is followed by *jihwa nirlekhan* (tongue scrapping), *kavala* and *gandoosha* (mouth gargling) according to *dosha* leads to further purification of *dosha*. If patient suffers from ulcers, gingivitis etc.; medicated decoction of oil, honey can be used accordingly for the same. Mouth or oral cavity is a part of first line of defense in the immune system. These three procedures *achaman*, *jihwa nirlekhan* and *danta dhavan* prevent toxins from being absorbed into the body which in turn boost the overall immune function.

***Dhoompana* (inhalation of medicated fumes)**

Oral hygiene is followed by medicated *dhoompana* through nose and mouth. It helps in liquification of *kapha dosha* and thereby increases secretions. Removal of stagnant secretions is a way removal of *doshas* from their *sanchaya sthana* (accumulation site) so that they cannot attain *prakopavastha* (vitiated state). This process helps in removal of secretions from nasal cavity, oral cavity and para-nasal sinuses thereby preventing microorganism proliferation in them, reducing chances of developing diseases like sinusitis and thereby helps in boosting immunity.

Dhoompana is also mentioned in hairfall or early greying of hair by *acharya* Charak. Drugs of *dhoompana* are slightly of *teekshna guna* (pungent) and hence exhibit a little irritant property. To counter this irritating effect, *nasya* with sesame oil or *anu taila* is advised in *dincharya* (daily regime) after *dhoompana*.

***Nasya* (oil or drug administration through nasal cavity)**

Ayurveda classics describe nasal cavity as '*Nasa hi siraso dvaram*' i.e. nose is the door of cranial cavity and highlights its importance in diseases pertaining to *urdhva-jatrugata* (supraclavicular region) and that of *sirah Pradesh*^[6] (head region). In *dincharya* (daily regime), following oral hygiene and *dhoompana*, *nasya* is advised. It is the multi-factorial approach of *nasya* that highlights its importance. *Nasya* is given to pacify the *vata dosha* that has been aggravated following removal of *kapha dosha* as a result of *dhoompana*. Along with that, it also facilitates removal of excessive *kapha dosha* by its virtue.

The other spectrum provides the nutritive components to the adjoining *urdhvajatru-gata indriya* (sensory organs above supraclavicular region) as well as other organs like *skandha* (shoulder), *hanu* (mandible), *greeva* (neck region). Nasal route of administration being third fastest route of drug absorption and bypassing first pass metabolism provides better bio availability. It is also the gateway of

respiratory tract as nasal cavity is exposed primarily to the air that we breathe and hence the irritants and organisms that it contains.

In terrestrial vertebrates, nasopharynx associated lymphoid tissue (NALT) represents first line of defense and their olfactory system detects low concentration of air borne volatile chemical substances. The relation between sense of olfaction and immune system is widely studied in animals. Nasal delivery of viruses results in ultra rapid innate immune system response in rainbow trout^[7].

Environmental toxicants may induce inflammatory response in the olfactory neuron system (OSN) including immune infiltration and production of inflammatory cytokines. These inflammatory responses cause the loss of OSNs that are then replaced by newly generated OSNs^[8]. Neurons of olfactory mucosa are also connected with the limbic system which controls emotions and memory in individuals.

Vyayama (Exercise)

Vyayama is considered to be an important part of *dincharya* regime. *Vyayama* should be done to *ardhha shakti*^[9] and to be avoided in *grishma* (summer season), *varsha* (rainy season) and *sharada ritu*^[10] (autumn season). *Acharya Sushrut* has mentioned benefits of *vyayama* as '*Na cha enam sahasa akramya jara samdhirohti*' i.e. neither a person doing *vyayama* regularly is afflicted by diseases

suddenly nor can premature ageing affects him^[11].

Modern researchers have also opined the relation between moderate exercise and immunology. During moderate exercise, anti-pathogen activity of tissue macrophages enhance recirculation of immune-globulins and anti inflammatory cytokines, NK cells and neutrophils thereby improvement in defense activity and metabolic health occurs^[12].

Abhyanga (massage) and Udvartana (Effleurage)

Massage of body with oil (*abhyanga*) or with dry powders (*udvartana*) should be done before taking a bath on daily basis. Various studies regarding the immunomodulator effects of daily massage have been conducted and it was found that there is considerable increase in number of circulating T and B lymphocytes and cytokines. A reduction in level of cortisol was also reported^[13].

Snana (Bathing)

Snana after *vyayama* and *abhyanga* provides relaxation to the body and a medium of maintaining personal hygiene. Cold water bath is advised for head bath and warm water for rest of the body. Warm water induces peripheral vasodilatation and hence increases inflammatory cells to periphery that will help in immune enhancing activity in peripheral tissues. Hot water immersion at varied temperatures was tried and resulted in

hemodilution with increased lymphocyte count in individuals but no change in cortisol level was seen^[14].

Padabhyanga (Foot massage) and padatra dharana (wearing footwears)

In *ayurvedic* doctrines, the *guna* (benefits) of *padabhyanga* (foot massage) is *nidrakrit* (sleep promoting). According to foot reflexology, this treatment stimulates the nervous system and the transfer of sensory stimuli to the brain which can increase the secretion of dopamine^[15]. The studies have shown immunomodulatory effects of dopamine by activating dopamine receptors, which are differently expressed in leukocytes, depending on cell type, activation state, Dopamine concentration and duration of exposure to dopamine^[16].

Padatra dharana is termed as '*ojasyam*' by *Acharya Sushruta*^[17]. It, not only prevents foot from local trauma but also from various parasites like hookworm to enter in our body^[18]. Tinea pedis also known as athlete's foot, the cause of which is walking barefoot in public restrooms, public showers, public bathhouses etc., is an uncomfortable condition and can lead to infection. These parasitic and fungal diseases make the immune system more and more weak. So to combat this condition, *padatra dharana* or wearing footwear is essential.

Ahaara sevan vidhaan (dietary rules)

Acharya Charak has explained eight specific factors of method of dieting i.e. *Ashtavidha aaharvidhi visheshaayatan*. This includes *prakriti* (nature of food), *karana* (processing of food), *samyoga* (combination of different food), *rashi* (amount or quantity of food), *desha* (geographical region related to the food), *kala* (diet according to season or diet according to age of the person), *upayog-samstha* (certain rules for dieting which indicates when to eat and when not to eat) and *upayokta* (diet according to consumer)^[19]. There are some other factors or rules mentioned in ayurveda related to diet termed as *dwaadash anna pravichaarana*^[20] (twelve rules related to diet). One should consume the food or *aahaar* after considering these factors which help in keeping *agni* (digestive and metabolic fire) and *dosha* in *saamyavastha* (equilibrium). *Dosha* and *agni saamyata* in an individual has been denoted as a symptom of Good health in ayurveda and Good health implies good immune power of the body.

Sadvritta and Aachar rasayana (codes of socio-behavioral conduct)

Aachar rasayana is explained in ayurvedic classics on an entirely different platform with various good effects on body without any pharmacological intervention. *Aachar rasayana* signifies the physical and mental conducts of a person which give the benefit of *rasayana*. *Rasayana* improves the health and

happiness which in turn promotes the production of *oja*, a vital element of the body. This *oja* can be compared to the immune system. So thereby, we can say that following these socio-behavioral codes of conduct will enhance the immunity of the individual.

Immunity through *ritucharya*

Ritucharya means the seasonal regime to be followed in order to stay healthy. The concept of *rogi bala* and *agni bala* plays a vital role in this context. In the beginning of *dakshinayan* and end of *uttarayan kala* i.e. in *varsha* (rainy season) and *grishma ritu* (summer season), *bala* (immunity) of the patient becomes very low. In the end of *dakshinayan* and beginning of *uttarayan* i.e. *hemant* (late autumn) and *shishir ritu* (winter season), same component i.e. *bala* becomes *uttam* or high and in between this *kala* i.e. *sharad* (autumn) and *vasant ritu* (spring season), *bala* remains moderate^[21]. This *bala* can be compared with immunity of a person. This variation can be explained in modern terminology in terms of photoperiod, a cue that is mediated by melatonin. Pineal melatonin codes day length information. Short day lengths enhance several aspects of immune function in laboratory studies and melatonin appears to mediate many of the enhanced immunological effects of photoperiod^[22]. The three *doshas* are subjected to various states of *sanchaya*

(accumulation), *prakopa* (vitiation) etc., according to seasons. Similarly, *agni bala* (digestive and metabolic fire) is also affected according to *ritu* (seasons) which specially gets diminished during the period of *ritusandhi* (inter-seasonal period i.e. seven days at the end of one season and commencement of other season) so specific precautions are advised in this period that are to be taken in order to stay healthy. During *ritusandhi*, immune mechanisms play an important role. *Ayurveda* mentions "*paadaanshik krama*" i.e. stepwise reduction in past season's diet and similarly stepwise increase in coming season's diet, as a dietary regime that should be followed at the end of each season and beginning of new season in order to stay healthy^[23]. If not properly followed, this leads to state of *dosha vaishamy* (improper dosha) and *vyadhi pradurbhava* (disease manifestation). *Shodhana* (detoxification) before certain *ritus* (seasons) i.e. when one is susceptible to certain kind of disorders is done for removal of *vikrit* (abnormal) *dosha*. These *shodhana* procedures not only alleviate *dosha prakopavastha* (vitiation of dosha) but also tend to increase digestive fire, *prasadan* (immaculateness) of *indriya* (senses), *mana* (spiritual power) and *buddhi* (intellectual power) and delay ageing by strengthening the *rogi bala* (immunity of patient) or improving the quality of *dhatu*^[24].

A seasonal change in immune function has also been observed by various researchers during animal studies. Immunological parameters like spleen mass, white blood cells, cellular immunity, IgG and IgM levels showed seasonal changes, cellular immunity was found to be high in winter than in summer^[25].

In order to counter the seasonal variations, these protocols regarding purifications, diet, pacifying maneuvers have been advocated to counter the threat of stage of immune-suppression.

Immune booster or rasayana drugs

If a patient is suffering from some chronic ailments then despite following *ritucharya* and *dincharya*, *naimittika rasayana* for that particular disease should be used. In general, use of *aajasrik rasayana* is advocated in healthy individuals after undergoing purification. The use of these drugs leads to improvement of quality of *dhatu*s and hence *ojas* i.e. the disease combating mechanism of body. Categorized under *yuktikrit bala* (immunity attained by following certain specific diet or drug), these drugs include *Ashwagandha*, *Amalaki rasayana*, *Agastya Rasayana*, *Chyawanprash* etc. Recent researches on these drugs further enhance their reputation as they possess anti-oxidant and anti-ageing properties which not only reduce the oxidative stress of body but also delay the process of ageing^[26]. Along with

these, special mention has given to *ahara* (diet), *nidra* (sleep) and *brahmacharya* (celibacy) as all of them at some level are associated with quality of *dhatu*s and *prasanna* (happy) state of *atma* (soul), *indriya* (senses) and *mana* (mind).

CONCLUSION

Vyadhi pratirodhaka shakti (resistance of the body from the occurrence of a disease) in an individual is dependent on variable factors like *agni* (digestive and metabolic fire of the body), *ojas* (vital element of the body), *prakrit bala* (innate immunity) etc. In order to enhance the virtue of *vyadhikshmatva* (immunity), various factors play a role which is connected to each other by some way or other. *Dincharya* (daily regime) and *ritucharya* (seasonal regime) mentioned in texts tend to make a positive feedback for the enhancement of same and reduction in chances of catching up a disease. Following the purification, dietary and behavioral protocols tend to normalize the state of *dhatu*s and *doshas* and their affliction and motivation towards a diseased state is reduced. Modern researches have also emphasized the importance of few of these procedures to be modulating the immune response. Specific procedures like *nasya*, *udvartana* etc. require more exploratory work to be conducted on their effect on various systems although a glimpse of their spectrum is already on the display by various

researchers. Neuro-endocrino-immunological response of individual practices is needed to be explored. Being devoid of these research facilities the dietary and lifestyle protocols of *ayurveda* are enriching the lives of followers in this modern world.

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