Review Article

BALYA KARMA MENTIONED IN AYURVEDA: A CRITICAL REVIEW

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Article Received on: 09/08/18 Approved for publication: 20/09/18

DOI: 10.7897/2230-8407.0910219

ABSTRACT

In present day world, with outbursts of novel bacterial and viral diseases and weakening of the human race due to polluted environment, it is a necessity to understand *Balya karma* of *Ayurveda* which refers to substances those are beneficial and tend to increase or enhance *Bala* of an individual, as a person having adequate *Bala*/ strength is less likely to get affected by diseases frequently. Although some related work has been done, but complete review is not available yet. Hence, an effort has been made for same so that critical analysis of the matter could be done to bring out fruitful conclusion which may be utilized for the benefit of mankind. *Bala* was found to be a state of anatomical and physiological excellence. *Balya dravya* execute their *Balya karma* by producing *Dosha saamyā*, *Vahni saamyā* and *Dhatu pushti*. While many factors affecting *Bala* are beyond the scope of physicians, but it is possible to manipulate the others. *Yuktivyapashraya chikitsa* may be utilized to enhance *Sahaja bala* through lifestyle management during pregnancy for enhancing the *bala* of the next generation, and *yuktikrita bala* through administration of *Balya dravya* (*Ahara* as well as *Aushadha*), *Balya karma* (Exercise, Yoga, etc) and psychic counselling (to promote *satva bala*). The concept of *Balya karma* and the pharmacodynamical properties of *Balya dravya* may be utilized to enhance the *Bala* in general or of some particular system/ organ as per the need of the situation which may help to build strong man power and a strong nation.

Keywords: *Balya karma*, *Ayurveda*, Strength promoters, Immunity

INTRODUCTION

Karma is one of the *sapta padartha* of the branch *Dravyaguna* of *Ayurveda* which is the factor responsible for the *Samyoga* (Association) and *Vibhaga* (Dissociation) of *Dravya* and is accomplished by *Rasapancaka*. *Balya karma* has been categorized under *Sarvadhātuka karma*. In the present day scenario, where every younger generation is weaker than the previous one and disease presentations by new bacteria, viruses, etc every now and then viz. ebola, dengue, chikungunya, etc. is occurring; it is the need of the hour to understand the *Balya karma* of *Ayurveda* defined as “*Balaya hitam balyam*”¹ which refers to substances those are beneficial and tend to increase or enhance *Bala* of an individual as *Caraka* has stated that only *Bala* is capable of defying *Dosha*².

Since ancient times, sages did all efforts to increase *bala*. It is equally important in present era as body is sustained properly through *bala* only³. Morbific elements prosper in some indispensable favourable conditions and increase the susceptibility to the disease⁴. Absence of these conditions lead to sustenance of the body by *Bala*. This can be analogised to *vedic* concept that seed sown in non- fertile soil will be destroyed just like fire put up in a fuel less or airless place ceases.

Although some work has been done on the subject but complete review has not yet been done. Hence, an effort has been made for the same so that a critical analysis of the matter could be utilized to formulate the guidelines for enhancing *bala* of the masses.

Ayurveda classics and their commentaries along with the modern correlations were studied and analyzed thoroughly. The collected data was utilized to draw meaningful conclusions.

CONCEPT OF BALA

Classical references regarding *bala* and related commentaries elucidate four distinguishing but intermingling and complementary notions explaining the physiological basis of *bala* in *Ayurveda*:

(A) *Bala* (Physical Strength) which can be assessed from the capability of doing physical activities like lifting of weights⁵.

(B) *Ojas* (Vitality) which is the essence of all seven *dhatu*^{6,7} and is responsible for liveliness.

(C) *Vyadhikshamatva* (Immunity) i.e. resistance to diseases which helps in preventing and curing diseases⁶.

(D) *Veerya* (*Shukra* = semen)

Though, it is strenuous to make a clear distinction between the above four, insightful commentators have clarified these concepts well as discrete entities.

In context of *bala* and *ojas*, although textually both *Caraka* and *Susruta* points at oneness of both^{6,5}, but when subtle meanings are sought one can work out conclusive difference between these. *Cakrapani* elucidated it by suggesting that from a generalized and broad point of view both *ojas* and *bala* can be regarded as one and same but strictly speaking these are discrete entities-*balahetuta prakarshena balashabda vachyata, na tu paramarthato balameva ojah*⁶. This conception is also supported by *Dalhana* '*paramarthatatu balaujasorbheda eva*'. *Dalhana* has further given definite distinguishing parameters of both *bala* and *ojas* by attributing *rasa*, *guna* and *veerya* to the latter while *bala* lacks these.

The firm line is drawn by the words of *Cakrapani*, who propounds that *ojas* is the seat of *bala* - "*sa(bala) ca prayah ojah sanshraya*". Hence, *bala* (*ashrayee*) is different from *ojas*

(ashraya) on account of *ashraya - ashrayee* concept. It may also be considered that *Oja* is the cause or mass and *Bala* is the effect or energy⁹.

Therefore, from the ongoing discussions it can be inferred that *bala* and *ojas* are separate but not mutually exclusive rather inter-dependent and complementary entities possessing different physico-chemical characters and consequently have different criteria of assessment.

The assumption of *bala* as *vyadhi-kshamatva* or immunity can be clarified by apprehending *bala* rendering the body to overwhelm the aetiological factors of the disease, which can be accorded to be a function of *ojas*⁸. Therefore this concept can be inferred as an applied facet of *ojas*. Maintenance of health entirely depends on *ojas*¹⁰.

Bala vis a vis Bala

Bala helps us to grow, undergo and withstand both physical and mental stressful conditions and represents potential source of strength and power to oppose decay and illness¹¹.

Hence, *Bala* is characterized by following:-

1. *Shakti lakshana bala*: Assessed by the capacity of doing work, adaptability for the tolerance of pain, stress and resistance to diseases (*Vyadhi-kshamatva*)¹².
2. *Upacaya lakshana bala*: *Balakrita* is explained as *Pushtikrita*¹³ pointing at oneness of *Bala* and *Pushti* which means *Upacaya*¹⁴ (growth of the body). Assessed by built up, stability and compactness of the body¹⁵.
3. *Utsaha lakshana bala*: *Alpabalatvam* is explained as *Utsahahani*¹⁵ pointing at oneness of *Bala* and *Utsaha* which means ability to perform the work in unfavorable conditions too¹⁷.
4. *Ojas lakshana bala*: *Balahani* is explained as *Ojas hani*¹⁸ pointing at oneness of *Bala* and *Ojas*¹⁶.
5. *Bala* is the capacity to perform physical activities^{17 18}.

Types of Bala: Three types are assigned to *bala*¹⁹ viz:-

Sahaja (congenital): It is also termed as *prakriti* (innate/ natural/ inborn/ native/ genetic/ inherited) and exists right from the birth. *Cakrapani* says that it causes “*hetvantara nirpeksha dhatuvridhi*”¹⁹ i.e. increases *dhatu* independent of any other factor. It may be considered of three types viz. Species specific, Racial specific or Individual specific. He further explains that it is pre- decided for an individual depending on the condition of *pumbeeja* (sperm) and *streebeeja* (ovum) as *Ayurveda* considers the origin of *prakriti* at the time of conception²⁰. Hence, *sahaja bala* can't be increased. *Gangadhara*, along with *shadadhatu samyoga* and nutritional status of mother, gives the credit of *sahaja bala* to *poorva janma karma*²¹.

Kalaja (time and age induced)

(a) Time induced (*Nityaga kala*):

(i) Seasonal variation²²:

Daurbalya – *Varsha*, *Greeshma*

Madhya bala – *Sharada*, *Vasanta*

Shreshtha bala – *Hemanta*, *Shishira*

Bala is increased in *visarga kala* and decreased in *adana kala*.

Kalaja Bala is also influenced during *Ritusandhi*.

(ii) Diurnal variation may also be considered

Poorvahna - Predominance of *Kapha*, has *Uttama Bala*,

Madhyahna - Predominance of *Pitta*, has *Madhyama Bala*

Aparahna - Predominance of *Vata*, has *Heena Bala*

(iii) Similarly nocturnal variations may also be considered.

(b) Age induced (*Avasthika kala*)²³:

Bala increases during *Balyavastha* (*Madhyama Bala*)

Reaches maximum in *Yuvavastha* (*Uttam Bala*)

Decreases during *Vridhnavastha* (*Heena Bala*)

It has been considered in *Vaya* of *Dashavidha Pareeksha*.

Yuktikrita (acquired i.e. conditioned by diet, exercise and medication).

Factors affecting it are:

(a) *Ahara* – Intake of nutritious food.

(b) *Ceshta* – Actions.

(c) *Yogaja* – *Rasayana*, *Vrishya*, *Balya dravya*, *Ojovardhaka*, *Vajeekarana Yoga*²⁴, some *yogika* procedures.

Of these three, congenital and time induced *bala* are beyond the scope of physicians as they are resistant from human modifications being contributed by *matrija*, *pitrija bhavas* (genetical factors), *daiva*, seasonal and age influences respectively whereas the acquired *bala* comes under the realm of physicians and can be modified by favourable and rational dietetic, exercise and medicinal regimen. This comes under the domain of *yuktivyapashraya cikitsa*. Congenital *bala* of the upcoming generations may also be increased through following *garbhini paricharya* (dietary and behavior rules to be followed in pregnancy) properly.

➤ Another classification of *Bala* is also available in *Caraka Samhita*:-

Deha Bala/ Agni Bala/ Satva Bala/ Vyadhi Bala²⁵:-

1. **Deha bala** (Physical capability): *Cakrapani* says it to be merely related to the body²⁶. *Vagbhatta* embraces *sahaja*, *kalaja* and *yuktikrita* as three types of *dehabala*²⁷. *Dalhana* gave the following characteristics-

(a) *Utsaha lakshana dehabala*- One who can perform the work in unfavorable conditions too.

(b) *Upacayalakshana dehabala*- Healthy body built up, stability and compactness of the body.

2. **Agni bala** (Capacity of digestion - *Ayurvedeeya shabdakosha*, 1st Part): It is a combined out turn of all *jatharagni*, *bhootagni* and *dhatvagni*²⁸. *Jatharagni* is the root cause of all these *agni* which is verified by *Caraka* who says that *Dehagni* is responsible for *ayu*, *varna*, *bala*, *svasthya*, *utsaha*, *upacaya*, *prabha*, *ojas*, *teja*, all other *agni* and *prana*¹⁹. It is of four types according to intensity viz. *Teekshnagni*, *Mandagni*, *Samagni* and *Vishamagni*²⁹ and of three types according to *Ahara matra* (Quantity of food ingested and digested without any complications) viz. *Utkrishta*, *Madhya* and *Alpa*³⁰.

3. **Satva bala**: Strength of *Satva* or *manas* is known as *sattvabala* or *manobala* which is also termed as *utsaha*²⁵. According to *Monier Williams Sanskrit Dictionary* ‘*Utsaha*’ refers to ‘strength of will’. Hence, it is the ability to perform the work willingly with full efforts and without any complications. Body follows psyche and vice versa. Hence, decreased *sattvabala* leads to decreased *shareera bala*³¹.

4. **Vyadhibala**: *Cakrapani* says that *Vyadhi* is one which produces various types of pain³². The strength of a disease is called *vyadhibala* which is inversely proportional to *aturabala*^{33 34}. According to severity, it is of two types i.e. *Mridul/ Daruna*³⁵ or of three types i.e. *Pravara/ Madhya/ Avara Vyadhibala*³⁶.

Factors determining Bala

1. **Jati** (Race)

2. **Kula** (Family)

3. **Desha** (Ecology) – It may be divided into 3 parts³⁸:

(a) *Jangala Desha* (Dry land) – *Uttama Bala*

(b) *Anoopa Desha* (Marshy land) – *Alpa Bala*

(c) *Sadharana Desha* (Normal land) – *Madhyama Bala*

4. **Kala** (Time factor) (*Nityaga kala*) – Divided into two i.e. *Adanakala* and *Visargakala* according to *Bala* of individuals and *Sanchaya*, *Prakopa* and *Prasara* of different *Dosha*.

5. **Vaya** (Age factor) (*Avasthika kala*)

6. **Pratyatmaniyata** (Individual specific)

Balavriddhikara Bhava³⁹

1. **Balavatpurusha deshe janma:** Birth in a place which promotes enrichment of *Bala* eg. individuals born in *Sindhu desha* are more *balvana*⁴⁰.
2. **Balavatpurusha kale:** Birth in a favorable time for eg. *Visarga Kala*, *Poorvahn*⁴⁸.
3. **Sukhashcha kalayoga:** A *sanvatsara* consists of six *ritu* each having its own characteristics, which being in normal/natural condition are termed as *kalayoga-sukha*^{48 41}.
4. **Beejakshetragna sampata:** Superior genetic material and advantageous internal environment in the uterus for conception⁴².
5. **Aharasampat:** Proper antenatal care through better nutrition to mother resulting in better growth of foetus. *Anna* is the best in *shareera sthitikara bhava*¹². *Bala* depends on *Anna/Ahara*^{43 44 45}. It holds the first place in *traya- upastambha* which again points at its significance⁴⁶.
6. **Shareerasampat:** It refers to *sadgunyam* of *shareera gunas*⁴⁷ which may be taken as *susamhata* (excellent compactness of body) and *pramanavat* (proportionate relation of different organs in *angula pramana*) *shareera* as both are liable for good strength. Healthy mother with well-built physical constitution⁴⁸ will render *shareerasampat* to the child.
7. **Satmyasampat:** It means acceptance for all substances and no hypersensitivity against anything. It is also enumerated in *dashavidha pareeksha* of *Caraka*.
8. **Satvasampat:** Good mental health and efficient dealing with the surroundings and stress. *Satva guna pradhana* individuals are lacking *chinta*, *shoka*, *bhaya*, *krodha* and *dukha* which is a favourable factor for *bala* (*shakti* and *upachaya*).
9. **Svabhavasansiddhi:** As per *Cakrapani*, *svabhava sansiddhi* indicates *balajanaka karma sansiddhi* inferring the application of *karmas* which offer strength viz. *vyayama*, *abhyanga*, etc⁴⁸. *Gangadhara* considers *svabhava* to be inherent quality of different persons for having varied amounts of *bala* and gives instance of lion who possesses the capability of fighting with bigger animals like elephant also⁵⁵. It may be considered as innate or genetically transferred resistance power as per modern parlance.
10. **Yauvana:** *Acharya Caraka* elucidated age as condition of the body depending on time which is primarily of three types – *baala*, *madhya* and *jeerna*. Here, *madhyama avastha* is characterized by proper *shareerika* and *manasika bala*, *veerya*, *paurusha*, *parakrama* with all *dhatu*s exhibiting their quality at the best²⁹.
11. **Karma:** *Cakrapani* clarifies *karma* as *vyayamadi karma* and *karmabhyasa* as the root cause for producing *bala*⁴⁸. *Gangadhara* denotes *karma* as *balakara karma* which suggests that actions enhancing *bala* are termed as *karma*⁵⁵. Concept of *yuktikritabala* is understood here which incorporates *bala* enhanced due to regular exercise.
12. **Sanharsha:** *Caraka* quoted 'harsha' as 'preenanaanaam' and 'shoka' as 'shoshanaanaam' implying that pleasant mood is best among saturating factors and grief is best among emaciating causes for the body¹². *Gangadhara* took *sanharsha* as cheerful disposition⁵⁵.

Apart from these, some other *balavriddhikara bhava* are *Nidra Sampat*⁴⁹, *Brahmacarya*, *Dosha Sampat*, *Dhatu Sampat*, *Mala Sampat*⁵⁰, *Agni Sampat*^{51 52}, *Bheshaja Sampata*, *Dincarya-Ritucharya Paalan*, *Hit sevan* and *Ahit Parityaga*, *Acharya Rasayana*, *Sadvritta paalan*.

Acharya Bhavamishra defined *Bala vriddhikara dravyas* as those which produce *Dosha saamyas*, *Vahni saamyas* and *Dhatu pushi*⁵³.

Bala vis a vis Oja⁵⁴

It is the substantial entity of the body responsible for the integrity of structure and function of all the tissues and for strength and vitality of human body.

Bala vis a vis Vyadhikshamatva⁵⁵

In *Ayurveda*, *vyadhikshamatva* is illustrated as the power of resistance capable enough to check the progress, occurrence or recurrence of diseases.

Caraka has further described two types of individuals: *Avyadhisaha/vyadhi akshamatva* (Persons incapable of resisting diseases) and *Vyadhisaha/vyadhi kshamatva* (Persons capable of resisting diseases) both of which are just opposite to each other.

Cakrapani quoted two types of *vyadhikshamatva*:

1. *Vyadhibalavirodhi kshamatva* – Destroys the disease which has occurred. May be correlated with *Yuktikrita bala* or artificial immunity of acquired immunity.
2. *Vyadyutpad pratibandhaka Kshamatva* – Doesn't let the *Vyadhi* to evolve. May be correlated with *Sahaja bala* or innate immunity.

Vyadhikshamatva is affected by factors viz. *Ojas*, *Bala*, *Ritu*, *Ahara*, *Anupana*, *Rasa*, *Jatakarma*, *Karna- vedhana*, *Lehana karma*, *Suvarna prashana*, *Dhoopana karma* and *Drugs*.

Veerya

Veerya (*Shukra* ~ Semen) is quoted as the best strength promoting factor^{56 57 58}. It literally means the 7th *Dhatu Shukra* which is considered as the final outcome of food in the most purified form as it has no *Mala* described in the texts⁵⁹. Normal physiological process of digestion starting from *Jatharagni* to *Dhatvagni* results in production of purest *Shukra Dhatu* which indicates normalcy and excellency of preceding 6 *Dhatu* resulting in general fitness with a firm and muscular body.

MANIFESTATIONS OF BALA IN PURUSHA

Bala is manifested in humans by⁸⁰:-

1. *Sthiropachita mamsata* i.e. well developed and firmly muscular body
2. *Sarva cheshtashu apratighatah* i.e. unobstructed and smooth performances of every action
3. *Svaravarna prasada* i.e. clarity of voice and enhanced complexion
4. *Bahyanaam abhyantaranam ca karananamatmakarya pratipatti* i.e. normal and efficient functioning of external (motor) (*Karmendriya*), internal (sensory) (*Jnanendriya*) organs and *manas* (mind).

Cakrapani and *Dalhana* are certain in anticipating the word *mamsa* as symbolic representative of all seven *dhatu*s. Thus *bala* gives stability and firmness by nourishing all the *dhatu*s.

Cakrapani defined *Cheshta* as only physical activities whereas *Dalhana* accepts mental and vocal actions as well. As per *Dalhana*, the unobstructed performance of these activities can be accredited to the *karma sadhana shakti* or *bala*⁶⁰. This standpoint is further reinforced by *Sushruta* who states that a person having adequate *bala* is capable of all his activities without hindrance⁶¹.

One with adequate *bala* is characterized by:-

1. *Samamamsa pramana*
2. *Sama samhanana*
3. *Dridhendriya*

Samamamsapramana is characterized by the ability to tolerate hunger, thirst, heat, cold and exercise and timely digestion and metabolism of the ingested food⁷⁸.

ASSESSMENT OF BALA (BALA PAREEKSHA)

The state of an individual's *Bala* can be understood through two *Lakshana*: the first is *Upacaya*, which means the built, stability, and compactness of the body, and second one is *Shakti*, which refers to the capability to do hard work⁶².

Caraka Samhita explained the assessment of *Bala* as per *Vyayamashakti*. He further says *Vyayamashakti* is assessed by *karmashakti* i.e. capacity to do work^{63 20}.

Bhavamishra directed to assess *bala* through 'cheshtapatutva' and not by 'sthaulya' or 'karshya'⁶⁴.

All the above mentioned characteristics of *Bala* are taken into account by *Acarya Caraka* in his *Dashavidha atura pareeksha*⁶⁵ amongst which, *vikrititah pareeksha* is utilized for *atura dosha bala pramana* through *Hetu, Dosha, Dooshya, Prakriti, Desha, Kala, Bala*⁶⁶. Rest of the nine examinations are for *Atura bala pramana* (*Bala* of patient) which are incorporated in the present study for assessing *bala* and are as follows:

- 1. Prakriti (constitution):** *Prakriti* is formed during *Garbhotpatti* according to *Doshadhikya*⁶⁷. *Samadoshaja Prakriti* is the best. *Dvandvaja Prakriti* have *Madhya Bala*. *Ekadoshaja Prakriti* is *Nikrishta*²⁶. Among *Ekadoshaja Prakriti*, *Shleshmala Prakriti* has *Shreshtha Bala*, *Pittala Prakriti* has *Madhyam Bala*, *Vatala Prakriti* has *Alpa Bala*.
- 2. Sara (excellence of dhatu or tissue elements):** Increase or decrease in the quantity of *dhatu* (body elements) leads to diseased condition⁶⁸. *Dhatu* present in their purest form produce strength and vitality in the body, the condition being known as *dhatu sarata*. Eight types of *Sara* are mentioned for knowing *Bala* of individuals^{69 70} viz. *Tvaksara, Raktasara, Mamsasara, Medasara, Asthisara, Majjasara, Shukrasara, Satvasara*. *Kashyapa*⁷¹ also mentioned *Ojas sara*, which has not been incorporated in the present study. On the basis of *Sara*, *Bala* is diagnosed⁷² and 3 types of individuals are seen:-
 - (a) *Sarvasara* (*Pravara bala*) – Having all types of *Sara*⁷².
 - (b) *Asara* (*Avara bala*) – Don't have symptoms of any of the *Sara*⁷².
 - (c) *Madhyasara* (*Madhyama bala*) – Symptoms of some *Sara* are present while some are absent⁷².
- 3. Samhanana/ samhati/ samyojana (compactness of organs):** It is used to examine physical built and compactness of the body⁷² and is of 3 types i.e. *Susamhata Shareera, Asamhata Shareera* and *Madhya Samhata Shareera* which are *Balvana, Alpa Bala* and *Madhyam Bala* respectively.
- 4. Pramana (measurement of the organs of the body):** *Caraka* and *Sushruta* have laid down the *Pramana* (*Utsedha, Vistara, Ayama*) of various *Anga Pratyanga* in *Anguli Pramana* for examining physical *Bala* and *Ojas*. *Sama Pramana Shareera* has measurements according to classics and is bestowed with *Deerghayu, Bala* and *Ojas*. *Vishama Pramana Shareera* has measurements different from classics either less or more and *Bala, Ojas*, etc. also varies accordingly. *Vishama Pramana* may be *Adhika* or *Heena* and is *nindya*⁷².
- 5. Satmya (homologation):** It indicates the things which are even otherwise harmful to body in general, but show wholesome effect due to constant usage⁷². *Acarya Caraka* mentioned *Dravyatah satmya* (refers to usage of *ghrita, ksheera, taila, mamsarasa*); *Rasatah satmya* (refers to *satmyata* to six *rasas*) and *Gunatah satmya* (refers to usage of *Ushna, Sheeta, Drava, Shushka, Snigdha, Rooksha*, etc. food materials).
- 6. Satva (psychic conditions):** It is classified into three types of *Satva*⁷² for examining *Manasika Bala* :-
 - (a) *Pravara- Uttama Manobala* (Individuals having *Pravara satva* are *sattvasara*)
 - (b) *Madhyama- Madhyama Manobala*
 - (c) *Avara- Heena Bala*
- 7. Aharashakti (Power of intake and digestion):** *Aharashakti* reflects the *agnibala* and is examined through *Abhyavaharana Shakti* (power to ingest) and *Jarana Shakti* (power to digest). It is of three types according to *Bala*⁵²-
 - (a) *Pravara – Agni Teekshna* or *Sama, Uttama Bala, Deerghayu*
 - (b) *Avara – Agni Manda, Nirbala, Alpayu*

(c) *Madhyama – Agni Vishama, Madhyama Bala, Madhyama Ayu*

- 8. Vyayamashakti (power to perform exercise):** It is used to examine *bala*¹⁰⁵ and is examined with reference to *karmashakti* i.e. one's ability to perform work through which three types of *bala* is estimated⁷². *Cakrapani* explained *karmashakti* as the capability to lift weights.
- 9. Vaya (age):** Age is broadly classified according to *bala*²⁹.
 - (a) *Balyavastha – Madhyama Bala* as essence of *dhatu* is not formed in proper quantity.
 - (b) *Yauvanavastha – Pravara Bala* as maturity of *dhatu* has been achieved.
 - (c) *Vridhnavastha – Low Bala* due to predominance of *Vata* and degenerative changes.

Hence, this *pareeksha* is an integrative approach of various multidimensional factors viz. genetical, anthropological, physiological and psychological parameters responsible for *Bala*.

MANAGEMENT/ INCREASE OF BALA THROUGH BALYA DRAVYA

- *Aindree, Rishabhee, Atirasa, Rishyaprokta, Payasya, Ashvagandha, Sthira, Rohini, Bala, Atibala*⁷³
- *Vidareekanda*⁷⁴, *Pakva Amra*⁷⁵, *Vatada, Abhishuka, Akshoda*⁷⁶, and *Kukkuta Mamsa*⁷⁷
- *Laghupanchamoola*⁷⁸
- *Kukkuta Mamsa* is the best *Balya dravya*
- *Shameedhanya varga – Masha*
- *Taila varga –Tila taila*
- *Kritanna varga = Sattu – Sadyo Balavardhaka*

TYPES OF BALYA ACTION

Prof. P. V. Sharma divided the *Balya* action into two categories. Some *Dravya* are *Balya* in general and some are *Balya* for some specific organ for eg. *Kapikacchu, Shatavaree, Bala, Atibala*, etc increase *Dhatu bala* in general. *Balya dravya* for particular system or organ are as follows: *Katukee- Yakrita balya, Arjuna-Hridya, Brahme- Medhya, Tagar- Naadee Sansthana, Kupeelu- Sushumna, Tikta Dravya- Amashaya*⁹.

Dr. Vishvanatha Dwivediji also says *Balya* drugs can be classified as General tonics, Haematinics, Stomachics, Intestinal tonic, Nervine tonic, Cardiac tonic, vascular tonic, Flesh tonic, etc.

MODERN REVIEW

Sir M. Monier Williams Sanskrit English Dictionary depicted *Bala* to be indicative of **Strength** (quality of being strong or powerful as it relates to muscular activity), **Power** (Rate at which work is done which may be calculated by multiplying force and velocity), **Vigor** (Active force or strength of body or mind), **Capacity** (potential ability to contain or to hold, the power to do something or ability to perform mentally), **Vitality** (That which distinguishes living things from non- living things or State of being alive), **Energy** (capacity of a system for doing work and is manifested in various forms viz. in form of motion in kinetic energy, in form of position in potential energy, in form of light, heat, ionizing radiation or sound etc.), **Force** (that which changes or tends to change the state of rest or motion of a body)⁷⁹.

THE CONCEPT OF BALA, IN RELATION TO MEDICAL SCIENCES

It could be interpreted at 3 levels viz.:-

1. Physical capability/ Kriyatmaka Bala (*Balam kriyasu samarthya*)⁸⁰

About 40% of the body is skeletal muscle, and perhaps another 10% is smooth and cardiac muscles. Means about 50% of whole

body (w/w) is its muscular part which is mainly responsible for shape, movement, covering and protection (to inner organs) etc.

Energetics of Muscle Contraction:- When a muscle contracts against a load, it performs *work*. This means that energy is transferred from the muscle to the external load to lift an object to a greater height or to overcome resistance to movement. In mechanical terms, work is defined by the following equation:-

W (work output) = **L** (load) X **D** (distance of movement against the load)

The energy required to perform the work is derived from the chemical reactions in the muscle cells during contraction.

Sources of Energy for Muscle Contraction:-

1. The first source of energy that is used to reconstitute the ATP is the substance *phosphocreatine*, which carries a high energy P-bond similar to the bonds of ATP.
2. The second important source of energy, which is used to reconstitute both ATP and phosphocreatine, is “glycolysis” of *glycogen* previously stored in the muscle cells.
3. The third and final source of energy is *oxidative metabolism*. This means combining the oxygen with the end products of glycolysis and with various other cellular foodstuffs (carbohydrates, fats and proteins) to liberate ATP. More than 95% of all the energy used by the muscles for sustained, long-term contraction is derived from this source.

2. Immunity (Vyadhi kshamatva)⁷⁷

“The health of an individual is due to *Bala*, whose other name is *Ojas* also. If the body is afflicted by different pathogenic organisms and other stresses, one cannot remain healthy i.e. the *Ojas* gets disturbed or deranged. Therefore, the *Bala* is directly responsible for the prevention, inhibition and arrest of the factors that cause the diseases, their virulence and strength” – *Introduction to Kaya Cikitsa by Dr. C. Dwarkanath*.

In Medical Science these functions of *Bala* are to be considered under the dimension of Immunity which is the ability to resist almost all types of organisms or toxins that tend to damage the tissues and organs.

Also, in context of *vyadhi kshamatva*, *Ojas (Bala)* may be correlated with the immunoglobulins/ antibodies which are glycoproteins produced by the plasma cells (derivatives of B lymphocytes) and are found in serum and tissue fluids. Most higher mammals possess five distinct classes of immunoglobulin molecules viz. IgG, IgA, IgM, IgD, IgE. *Ojas* and immunity are comparable as both provide immunity; are present in equivalent quantity (*Apara ojas* being *ardhanjali* or 96 g approximately equal to the total amount of immunoglobulins) and circulate in the body as a part of blood. Also, *ojas* is produced at very first among living beings just like the most abundant immunoglobulin IgG is also found in foetus by crossing the placental barrier which supplies readymade immunoglobulin to the foetus, thereby preventing it from infection. *Ojonasha* or *ojokshaya* destroys life just like lack of immunoglobulin increases the proneness to infections and ultimately to death.

3. Genes/ Niyantaratmakā Bala (Beejabhagavyaya)⁸¹

“The basic functional unit of heredity located at a definite locus on a particular chromosome.” [Oxford and IBH New Medical Dictionary]

The nucleus is the control center of the cell (unit of all living beings). The nucleus contains large quantities of DNA, which are the genes. The genes determine the characteristics of the cell's protein, as well as the intracellular enzymes that control cytoplasmic and the nuclear activities.

These genes control hereditary from parents to children, also control day to day function of all the body's cells. The genes control cell function by determining which substances are synthesized within the cell – which structures, which enzymes,

which chemicals. Each gene, which is a nucleic acid called *deoxyribonucleic acid* (DNA), automatically controls the formation of another nucleic acid, *ribonucleic acid* (RNA); this RNA then spreads throughout the cell to control the formation of a specific protein. There are more than 30,000 different genes in each cell. These genes control and promote reproduction of the cell itself. Some of the nuclear proteins are *structural protein*, which in association with various lipids and carbohydrates form the structures of the various intracellular organelles. The majority of the proteins are *enzymes* that catalyze the different chemical reactions in the cells. For instance, enzymes promote all the oxidative reactions that supply energy to the cell, and they promote synthesis of all the chemicals, such as lipids, glycogen and *adenosine triphosphate* (ATP).

Extraction of Energy from Nutrients: This is the specific function of the *Mitochondria* (powerhouse of the cell). The principle substances from which cells extract energy are foodstuffs (*Ahara-Dravyas*) that react chemically with oxygen – carbohydrates, fats and proteins. In the human body, essentially all carbohydrates are converted into *glucose* by the digestive tract and liver before they reach the other cells of the body. Similarly proteins are converted into *amino acids* and fats into *fatty acids*. Inside the cell, the foodstuffs react chemically with oxygen (*Samana-Vayu*), under the influence of enzymes that control the reactions and channel the energy released in the proper direction. Almost all the oxidative reactions occur inside the mitochondria, and the energy that is released is used to form the high-energy compound ATP. Then, ATP, not the original foodstuffs, is used throughout the cell to energize almost all the subsequent intracellular metabolic reactions.

Uses of ATP for Cellular Function: Energy from ATP is used to promote three major categories of cellular functions⁸²:-

1. **Transport** of substances through multiple membranes in the cell,
2. **Synthesis of chemical compounds** throughout the cell, and
3. **Mechanical work**. The final major use of ATP is to supply energy for special cells to perform mechanical work.

DISCUSSION

All the above mentioned characteristics of *Bala* match well with the definition of Health by World Health Organization (WHO) asserting it to be ‘a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity’⁸³ which closely resembles the definition laid down in *Ayurvedeeya* texts, more than 3000 years ago⁸⁴.

To summarize, *bala* facilitates development of a well and firmly built body, helps in effective and smooth performance of all activities, renders the motor and sensory organs to perform their respective functions without hindrance and ushers in well-being. It is characterized by capacity of the body to work, to resist disease and infection and to resist the stress imposed by such factors like heat, cold, atmospheric pressure changes and accelerative forces of jolts and vibrations. It, therefore enables an individual to dominate his/her usual environment.

Balya dravya execute their *Balya karma* by producing *Dosha saamya*, *Vahni saamya* and *Dhatu pushti*⁸⁵.

Many *Balya dravya* have been listed in the texts. But a lot of them may be not available at present. *Acharya Caraka* directs to utilize the drugs having similar pharmacological actions in the absence of the original drugs.

There is clear explanation of *guna* of *Brimhana dravya* in classical text but *guna* of *Balya dravya* is not given separately. *Guna* of *Balya dravya* as per analysis of *Rasapanchaka* of 10 *dravya* given as *balya mahakashaya* by *Caraka* can be illustrated

as follows: *Madhura rasa* 60%, *Snigdha guna* 70%, *Sheeta veerya* 80%, *Madhura vipaka* 90%.

CONCLUSION

While many of the factors affecting *Bala* are beyond the scope of the physicians, but it is possible to manipulate the others. *Yuktivyapashraya chikitsa* may be utilized to enhance *Sahaja bala* through lifestyle management during pregnancy for enhancing the *bala* of the next generation, and *yuktikrita bala* through administration of *Balya dravya* (*Ahara* as well as *Aushadha*), *Balya karma* (Exercise, Yoga, etc) and psychic counselling (to promote *satva bala*)

The concept of *Balya karma* and the pharmacodynamical properties of *Balya dravya* may be utilized to enhance the *Bala* in general or of some particular system/ organ as per the need of the situation which may help to build strong man power and a strong nation.

REFERENCES

1. Sri Taranatha Tarkavachaspati. *Vachaspathyam* (A comprehensive Sanskrit Dictionary). Vol. VI, p4565. Varanasi: Chaukhambha Sanskrit Series; 1962.
2. Agnivesha. *Caraka Samhita* with *Ayurveda Dipika* commentary of Cakrapani. Ed. Yadavji Trikamji Acharya. *Cikitsasthana* 3/ 167, p- 413. Varanasi: Chaukhambha Sanskrit Sansthan; Reprint 2014.
3. Ibidem (2). *Caraka Samhita. Nidanasthana. Shoshanidana Adhyaya*. 6/4, 219
4. Ibidem (2). *Caraka Samhita. Cikitsasthana. Jwaracikitsitam Adhyaya*. 3/68, 404
5. E-samhita, Cakrapani, Dalhana on *Sushrut Sutrasthana* 15/19, Central Council for Research in Ayurvedic Sciences (CCRAS), New Delhi, available on <http://niimh.nic.in/ebooks/esushruta/?mod=read>, 10 June 2017.
6. Sushruta. *Sushruta Samhita* with *Nibandhasangraha* commentary of Dalhana. Ed. Yadavji Trikamji Acharya. *Sutrasthana*, 15/19, P 71. Varanasi: Chaukhambha Sanskrit Sansthan; Reprint 2014.
7. Ibidem (2). *Caraka Samhita. Sutrasthana. Kiyantashiraseeya Adhyaya*, 17/117, 105
8. Ibidem (2). *Caraka Samhita. Cikitsasthana. Jwaracikitsitam Adhyaya*, 3/166- 167, P 413
9. Sharma P.V. *Dravyaguna Vigyana*. part-I. Revised Golden Jubilee Edition., P 360. Varanasi: Chaukhambha Bharati Academy; 2013.
10. Ibidem (2). *Caraka Samhita. Cikitsasthana. Rasayanadhyaya*, 1/42, P 378
11. Ibidem (2). *Caraka Samhita. Sutrasthana. Vividhashitapeetiya Adhyaya*, 28/6, 177
12. Ibidem (6). *Sushruta Samhita. Sutrasthan. Doshadhatumalakshayavridhivigyaneeya Adhyaya. Dalhana* on 15/28, P 73
13. Ibidem (6). *Sushruta Samhita. Sutrasthan. Doshadhatumalakshayavridhivigyaneeya Adhyaya. Dalhana* on 15/ 4, P 67
14. Ibidem (2). *Caraka Samhita. Cikitsasthana. Grahanicikitsa Adhyaya. Cakrapani* commentary on 15/3,4; P 510
15. Ibidem (6). *Sushruta Samhita. Sutrasthana. Doshadhatumalakshayavridhivigyaneeya Adhyaya. Dalhana* on 15/ 13, P 70
16. Ibidem (2). *Caraka Samhita. Cikitsasthana. Grahanicikitsa Adhyaya*. 15/3,4; P 510
17. Ibidem (6). *Sushruta Samhita. Sutrasthana. Vedotpatti Adhyaya. Dalhana* on 1/28, P 7
18. Ibidem (6). *Sushruta Samhita. Sutrasthana. Shishyopanayaneeya Adhyaya. Dalhana* on 2/3, P 10
19. Ibidem (2). *Caraka Samhita. Sutrasthana. Tisraishaneeya Adhyaya*. 11/36, P 74
20. Ibidem (2). *Caraka Samhita. Sutrasthana. Na vegan dharaneeya Adhyaya*. 7/40, P 52
21. E-samhita, Gangadhara on *Caraka Sutrasthana*. 11/16, Central Council for Research in Ayurvedic Sciences (CCRAS), New Delhi, available on <http://niimh.nic.in/ebooks/ecaraka/?mod=read>, 10 June 2017
22. Ibidem (2). *Caraka Samhita. Sutrasthana. Tasyashiteeyo Adhyaya. Cakrapani* on 6/8, P 45
23. Ibidem (2). *Caraka Samhita. Vimanasthana. Rogabhishagjiteeyavimana Adhyaya*. 8/122, P 280
24. Ibidem (2). *Caraka Samhita. Sutrasthana. Tisraishaneeya Adhyaya. Gangadhara* 11/36
25. Ibidem (2). *Caraka Samhita. Nidanasthana. Apasmaranidana Adhyaya* 8/37, P 229
26. Ibidem (2). *Caraka Samhita. Sutrasthana. Tasyashiteeyo Adhyaya. Cakrapani* on 6/5, P 44
27. Vagbhatta. *Ashtanga Hridaya* with *Sarvangasundara* commentary of Arunadatta and *Ayurveda Rasayana* commentary of Hemadri. Ed. Pandita Hari Sadashiva Shastri Paradkara. *Shareerasthana*, 3/ 77, 78, P 401. Varanasi: Chaukhambha Sanskrit Sansthan; Reprint 2014.
28. Ibidem (2). *Caraka Samhita. Cikitsasthana. Grahanicikitsa Adhyaya. Cakrapani* on 15/41, P 516
29. Ibidem (2). *Caraka Samhita. Vimanasthana. Roganeekavimana Adhyaya*. 6/12, P 255
30. Ibidem (2). *Caraka Samhita. Sutrasthana. Matrashiteeyo Adhyaya. Cakrapani* on 5/3, P 36
31. Ibidem (2). *Caraka Samhita. Shareerasthana. Mahateegarbhavakrantishareeram Adhyaya*. 4/36, P 323
32. Ibidem (2). *Caraka Samhita. Nidanasthana. Jwaranidana Adhyaya. Cakrapani* on 1/5
33. Ibidem (2). *Caraka Samhita. Sutrasthana. Sneha Adhyaya*. 13/77, P86
34. Ibidem (6). *Sushruta Samhita. Cikitsasthana. Netrabastivypatchikitsitam Adhyaya*. 36/16, P 529
35. Ibidem (2). *Caraka Samhita. Vimanasthana. Roganeekavimana Adhyaya. Cakrapani* on 6/3, P 252
36. Ibidem (2). *Caraka Samhita. Vimanasthana. Rogabhishagjiteeyavimana Adhyaya*. 8/123, P 280
37. Ibidem (2). *Caraka Samhita. Indriyasthana. Varnaswareeyamindriyam Adhyaya*. 1/5, P 354
38. Ibidem (2). *Caraka Samhita. Kalpasthana. Madanakalpa Adhyaya*. 1/8, P 653
39. Ibidem (2). *Caraka Samhita. Shareerasthana. Shareeravichayashareeram Adhyaya*. 6/13, P 332
40. Ibidem (2). *Caraka Samhita. Shareerasthana. Shareeravichayashareeram Adhyaya. Cakrapani* on 6/13, P 332
41. Ibidem (2). *Caraka Samhita. Vimanasthana. Rogabhishagjiteeyavimana Adhyaya*. 8/125, P 281
42. Ibidem (6). *Sushruta Samhita. Shareerasthana. Shukrashonitashuddhishareeram Adhyaya*. 2/33, P 348
43. Ibidem (2). *Caraka Samhita. Sutrasthana. Annapanavidhi Adhyaya*. 27/349-350, P 174
44. Ibidem (2). *Caraka Samhita. Vimanasthana. Rogabhishagjiteeyavimana Adhyaya*. 8/120, P 280
45. Ibidem (6). *Sushruta Samhita. Sutrasthana. Vedotpatti Adhyaya*. 1/28, P 7
46. Ibidem (2). *Caraka Samhita. Sutrasthana. Tisraishaneeya Adhyaya*. 11/35, P 74
47. Ibidem (2). *Caraka Samhita. Shareerasthana. Shareeravichayashareeram Adhyaya. Gangadhara* on 6/13
48. Ibidem (2). *Caraka Samhita. Vimanasthana. Rogabhishagjiteeyavimana Adhyaya*. 8/116,117; P 279
49. Ibidem (2). *Caraka Samhita. Sutrasthana. Ashtauinditeeya Adhyaya*. 21/36, P 118
50. Ibidem (2). *Caraka Samhita. Cikitsasthana. Rajayakshmachikitsitam Adhyaya*. 8/42, P 461

51. Ibidem (2). *Caraka Samhita. Sutrasthana. Annapanavidhi Adhyaya*. 27/342, P 173
52. Ibidem (2). *Caraka Samhita. Cikitsasthana. Grahanicikitsa Adhyaya*. 15/3, P 510
53. *Bhavamishra. Bhavaprakasha*. edited by Sri Brahma Sankhara Mishra. Part I. 9th edition. Purvakhand, dvitiya bhaga, 7/ 117, P 920. Varanasi: Chaukhambha Sanskrit Sansthan; 2005.
54. Manjula, Yadav A., Ritisha, Kotecha M. *Ojas: A Concept unique to Ayurveda*. World Journal of Pharmaceutical Research; Vol 7, Issue 11, 382- 395
55. Manjula, Yadav A., Kotecha M. Concept of *Vyadhikshamatva* (Immunity) in *Ayurveda* – A Critical Review. European Journal of Pharmaceutical and Medical Research 2018; 5(2), 234-240.
56. Ibidem (2). *Caraka Samhita. Sutrasthana. Arthedashamahamooleeyo Adhyaya*. 30/15, P 186
57. Ibidem (6). *Sushruta Samhita. Sutrasthana. Doshadhatumalakshayavridhivigyaneeya Adhyaya*. 15/7, P 68
58. *Vridhdha Vagbhatta. Ashtangasangraha*. edited by Shivprasad Sharma. 2nd edition. *Sutrasthana*. 19/3, P 149. Varanasi: Chowkhamba Sanskrit Series Office; 2008.
59. Ibidem (2). *Caraka Samhita. Nidanasthana. Shoshanidana Adhyaya*. 6/9, P 220
60. Ibidem (6). *Sushruta Samhita. Sutrasthana. Doshadhatumalakshayavridhivigyaneeya Adhyaya*. *Cakrapani and Dalhana on 15/24*
61. Ibidem (6). *Sushruta Samhita. Sutrasthana. Aturopakramaneeyo Adhyaya*. 35/35, P 156.
62. Ibidem (6). *Sushruta Samhita. Sutrasthana. Doshadhatumalakshayavridhivigyaneeya Adhyaya*. 15/33-34, P 74.
63. Ibidem (2). *Caraka Samhita. Vimanasthana. Trividharogavisheshvigyaneeyavimana Adhyaya*. 4/8, P 248.
64. *Bhavamishra. Bhavaprakasha*. edited by Sri Brahma Sankhara Mishra. Part I. 9th edition. Purvakhand, dviteeya bhaga, 7/ 118, P 920. Varanasi: Chaukhambha Sanskrit Sansthan; 2005.
65. Ibidem (2). *Caraka Samhita. Vimanasthana. Rogabhishagjiteeyavimana Adhyaya*. 8/94, P 276.
66. Ibidem (2). *Caraka Samhita. Vimanasthana. Rogabhishagjiteeyavimana Adhyaya*. 8/101, P 278.
67. Ibidem (6). *Sushruta Samhita. Shareerasthana. Garbhavyakaranashareeram Adhyaya*. 4/62, P 360.
68. Ibidem (2). *Caraka Samhita. Sutrasthana. Khuddakachatushpado Adhyaya*. 9/4, P 62.
69. Ibidem (2). *Caraka Samhita. Vimanasthana. Rogabhishagjiteeyavimana Adhyaya*. 8/102, P 278.
70. Ibidem (6). *Sushruta Samhita. Sutrasthana. Aturopakramaneeyo Adhyaya*. 35/16, P 152.
71. *Vridhdha Jivaka. Kashyapa Samhita*. Revised by Vatsya. *Sutrasthana*. 28/36, P 54. Varanasi: Chaukhambha Sanskrit Sansthan; 2013.
72. Ibidem (2). *Caraka Samhita. Vimanasthana. Rogabhishagjiteeyavimana Adhyaya*. 8/111- 121, P 278- 280.
73. Ibidem (2). *Caraka Samhita. Sutrasthana. Shadavirechanashatashriteeyo Adhyaya*. 4/9 (7), P 32.
74. Ibidem (2). *Caraka Samhita. Sutrasthana. Annapanavidhi Adhyaya*. 27/ 121, P 160.
75. Ibidem (2). *Caraka Samhita. Sutrasthana. Annapanavidhi Adhyaya*. 27/ 139, P 160.
76. Ibidem (2). *Caraka Samhita. Sutrasthana. Annapanavidhi Adhyaya*. 27/ 157, P 161.
77. Ibidem (2). *Caraka Samhita. Sutrasthana. Annapanavidhi Adhyaya*. 27/ 67, P 158.
78. Ibidem (6). *Sushruta Samhita. Sutrasthana. Dravyasangraheeya Adhyaya*. 38/67, P 169.
79. Sir Monier Monier-Williams. A Sanskrit- English Dictionary. Delhi: Motilal Banarsidass Publishers; 1981, P 722.
80. Ibidem (6). *Sushruta Samhita. Uttara tantra, Chedyarogapratishedha Adhyaya. Dalhana on 15/13, P 622.*
81. Ibidem (2). *Caraka Samhita. Shareerasthana. Mahateegarbhavakrantishareeram Adhyaya*. 4/30,31; P 321-322.
82. Guyton A. C., Hall J. E. Textbook of Medical Physiology. 9th edition. W. B. Saunders company, P 22- 23.
83. Preamble to the Constitution of the World Health Organisation as adopted by the International Health Conference. New York. 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the WHO, no.2, p. 100) and entered into force on 7 April 1948.
84. Ibidem (6). *Sushruta Samhita. Sutrasthana. Doshadhatumalakshayavridhivigyaneeya Adhyaya*. 15/41, p 75.
85. *Bhavamishra. Bhavaprakasha*. edited by Sri Brahma Sankhara Mishra. Part I. 9th edition. Purvakhand, dvitiya bhaga, 7/ 117, P 920. Varanasi: Chaukhambha Sanskrit Sansthan; 2005.

Cite this article as:

Manjula et al. Balya karma mentioned in Ayurveda: A critical review. Int. Res. J. Pharm. 2018;9(10):18-24 <http://dx.doi.org/10.7897/2230-8407.0910219>

Source of support: Nil, Conflict of interest: None Declared

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