

A review on balya action mentioned in Ayurveda

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ABSTRACT

Medicinal and dietary substances have been used for various purposes including nutritional from time immemorial. Various activities such as immunomodulator, bulk promoting, nutritional, etc. that enhance strength, immunity, bulk of the body resulted by the use of medicinal or dietary substances are termed in total as *Balya* in *Ayurveda*. The term *Balya* originally stands for all those actions that enhance the "*Bala*". The word "*Bala*" refers to the strength and ability of the body or part of the body to cope up with various physical stressors. This term "*Bala*" refers to various body components and functions as per the science of *Ayurveda*. Even in the presence of modern scientific knowledge regarding body strength, Ayurveda concepts add varied dimensions to provide detailed explanation of *Balya* term. The *balya* action is critically analyzed and discussed in this review.

Key words: *Ayurveda*, *Bala*, *Balya*, kapha, mamsa

INTRODUCTION

Balya (~strength promoting activity) is an action which is considered as one of the important concept as per *Charaka*. Due to this reason a group of 10 drugs is described for *balya* activity.^[1] In general any action that increases "*Bala*" (~strength) of the individual is seen as "*Balya*".^[2] In other words that which is favorable and lead to the increase of "*Bala*" or strength is considered as "*Balya*". Hence it is quite necessary to understand the concept of *Bala* as per *Ayurveda*. Thus to understand the action *Balya* it is necessary to know the concept of "*Bala*" in *Ayurveda*.

Even though, *Bala* stands for the strength of the body, the word is being used in different contexts to denote various aspects accordingly. All the aspects related to *Balya* action in-fact do have either functionality or even a

direct or indirect beneficial effect on the strength of the body. Thus, the evaluation of an activity of the drug with respect to a complex action like *Balya*, it is very important to have a cluster approach of many investigations, such that a total and a precise evaluation of actions like *Balya* are possible. The paper tries to provide a profound review of the action and also gives possible common investigations to be adopted for the evaluation of *Balya* action clinically.

CONCEPT OF BALA IN AYURVEDA

The word *Bala* has been used invariably for strength of mind body and its components. However, the term is also used as a synonym for those components of the body which have the function of providing strength, protection, nourishment and stability to the other parts of the body. Hence, the word *Bala* is synonymously used for normal *Kapha dosha* (~the factor primarily responsible for strengthening and lubricating the body) and *Ojus* (~bioenergy or body component that helps in sustaining of life). It also stands for immunity and immune system in normal state.

According to *Sushruta*, "*Bala*" is defined as "the factor due to which one obtains the nourishment and stability of *Mamsa dhatu* (~the muscular tissues of the body), ability to perform various tasks efficiently, good complexion, clearness and pleasantness of voice along with clear and efficient working of all the organs either external like *Jnyaanendriya* (sense organs) or *Karmendriya* (organs with motor functions) and internal like *Manas* (mind), *Aatma* (spirit), etc".^[3]

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In *Sushruta* the word “*Bala*” refers to “*Ojus*” also^[5] which has a function of maintaining the “*Bala*” of the body. In-fact many authors of *Ayurveda* are of the opinion that *Bala* should be referred to “*Ojus*”. The word “*Bala*” also denotes the normal “*Kapha dosha*” as it has the function of providing *Bala* for the body normally. It is also considered as “*Oja*” by *Charaka*.^[4,5]

Further *Charaka* also classifies *Bala* as three types namely *Sabhaja* (natural), *Kalaja* (seasonal and age) and *Yuktikrita* (act of intelligence).^[6] Among the three, the *Yuktikrita* type is explained as the *Bala* that is developed by activities specially performed for increasing the same. These interventions include various exercises, *Yoga*, food articles and drugs having *Rasayana* (~a general tonic that nourishes all the tissues of the body) and *Vajikarana* (~an action that involves nourishment to the *Shukra* primarily) properties.^[6] According to *Chakrapani*, the food includes the articles like meat, ghee, etc. and activities includes rational practice of rest and exercise while *Yoga* refers to various medicinal preparations that are used in the treatment as *Rasayana* and *Vajikarana*. The concept is more towards the explanation of acquired immunity. This also tends towards the explanation of concept regarding bioenergy. In this context, *Bala* is considered as effect of the food, medicine or activities which are having the action of *Balya*.

On the whole the term *Bala* refers to three contexts as per the various *Ayurvedic* references as illustrated in the Figure 1.

BALYA ACTION IN AYURVEDA

The action *Balya* is defined as “*Balaaya hitam balyam*” which refers to substances those are beneficial and tend to increase *Bala* of an individual.^[7]

As per the review of *Bala* concept, the *Balya* action possesses different dimensions which are to be assessed

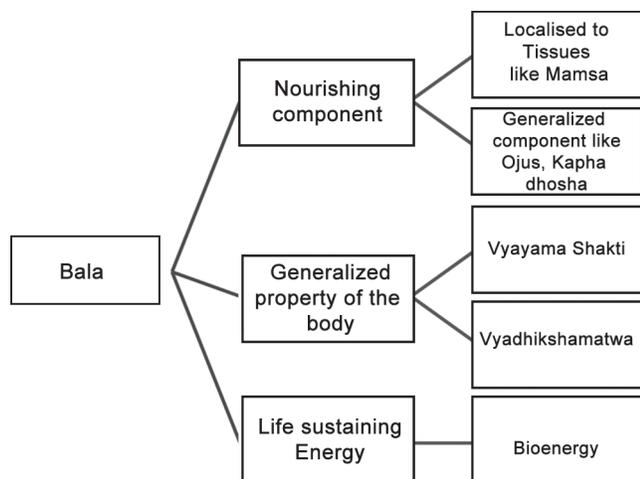


Figure 1: Schematic diagram of contexts of *Bala*

to ascertain complete action with respect to a given drug. Hence, it is important to have a review of the action that is necessary to understand the modalities of its assessment.

Emergence of concepts of immunity, bioenergy and nutritional supplements in the contemporary science have given an opportunity for scientific validation of concept of *Bala* and related *Balya* action.

The action *Balya* can be regrouped on the basis of three categories of *Bala* as shown in Figure 2.

The first group *Balya* action consists of nourishing factors responsible for providing necessary nutrients to ensure stability of certain tissues and organs. They include substances that possess actions such as bulk promoters, hematinics, stomachic, intestinal tonics, nervine tonics, cardiac tonics and vascular tonics. The effects of such drugs are usually on a certain part ensuring its stability and nutrition. It may not have a generalized effect or that may have secondary action on other parts.

The second group of action consists of those provide a generalized effect. They have a primary effect of providing enough energy to ensure generalized stability of the body and strengthening it by protecting against any intrusion by various types of pathogens. They include substances that possess actions like generalized tonics, anti-periodic, food substances with high nutritional value, nutritional supplements and activities that help in increasing the bioenergy of the individual like *Yoga*.

The third group of action regarded as *Balya* consists of those which provide necessary supplementation for the sustenance of normal *Kapha dosha*. They are usually considered as secretions or fluids that are responsible for the protection of body’s vital organs, especially the brain,

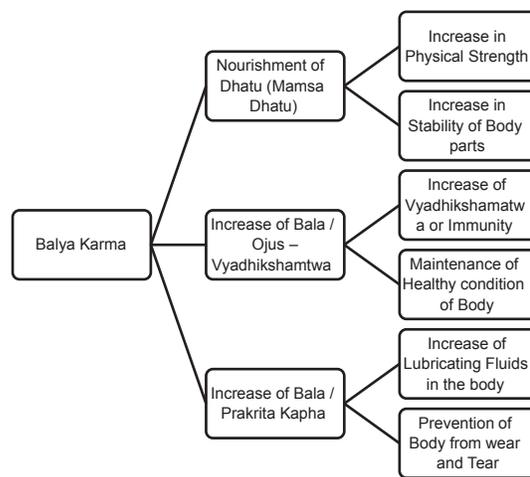


Figure 2: Schematic diagram of dimensions of *Balya* action and its effects

heart, joints, etc. As most of these fluids mainly contain proteins they are usually supplemented with nutritional supplements. They include substances like general tonics, medicated ghee, medicated oils, cardio tonics and therapies like oil massages.

METHODS TO EVALUATE THE *BALYA* ACTION OF DRUGS

The *Balya* actions with of various substances, either medicaments or dietary substances are clearly mentioned in *Ayurvedic* classics. The assessment of this action is done by examining *Bala* of the individual with respect to the method of *Balya* action. *Charaka Samhita* explained the assessment of *Bala* as per *Vyayamashakti*.^[8] The term *Vyayama* in turn is defined as the activity that produces exertion.^[9] The quantification of exercise is subjective and needs objective approach to obtain the proper scheme for the comprehensive evaluation of the action.

On the basis of the observations regarding *Bala*, the drugs that are grouped under the heading of *Balya* in *Ayurveda* can be reclassified into three headings namely:

1. That increases the *Mamsa dhatu* or muscular tissues of the body
2. Immunomodulators and bioenergy
3. That which enhances lubrication in the body.

The *Balya* action of drug may have at least of the the three above listed effects. Hence a comprehensive plan with all the three major dimensions is required to evaluate a *Balya* drug.

In light of the present known scientific laboratory investigation methods, those which are helpful in the evaluation of the above three dimensions of the drug action are enlisted in Table 1.

The 'TMT' or the Bruce treadmill test is a standardized procedure used to evaluate the cardiovascular fitness of athletes or anyone else for that matter. It is one of the methods for the assessment of volume of maximum oxygen (VO₂ max) which refers to the maximum amount of oxygen that an individual can utilize during intense or maximal exercise. It is one of the factors that can determine a person's capacity to perform sustained exercise and is

Table 1: The methods for the evaluation of the three dimensions of *Balya Karma*

Dimensions for assessment	Methods of assessment
Increases in capacity of muscular tissues, including cardiac muscle	TMT stress test
Immunomodulators and bioenergy	TMT and immunoassay
Lubrication in the body parts	Comprehensive metabolic panel

TMT=Treadmill test

linked to aerobic endurance. It is also used to estimate the metabolic equivalent of task (MET) with respect to an individual. The MET, or simply metabolic equivalent, is a physiological concept expressing the energy cost of physical activities as multiples of resting metabolic rate.

The immunoassay is a biochemical test that measures the presence or concentration of a macromolecule in a solution through the use of an antibody or immunoglobulin. It gives the idea on the immunological status of the body. There are several tests under immunoassay out of which enzyme-linked immunosorbent assay (ELISA), memory lymphocyte immunostimulation assay (MELISA) and radioimmunoassay would be useful. Again the necessary immunological tests that are necessary to specify the antibodies generated can also be used as per the requirement.

The comprehensive metabolic panel consists of 14 laboratory tests namely serum glucose, serum calcium, blood urea nitrogen (BUN), serum creatinine, serum electrolyte (4 tests - sodium level, potassium level, chloride level, carbon dioxide level), serum total protein, serum albumin, serum bilirubin, serum alkaline phosphatase, serum aspartate amino transferase (AST) or SGOT and serum alanine amino transferase (ALT) or SGPT. Among the tests the main organs that are being screened is kidney and liver. The additional tests that depict the protein, electrolytes and glucose while provide the necessary data to assess the basic metabolic condition and health status of the body. Even investigations involving major fluids of the body like synovial fluid, peritoneal fluid, pericardial fluid and meningeal fluid like joint fluid analysis will be much more helpful in evaluation.

DISCUSSION

Upon exhaustive review about the action *Balya* it was found that the action holds a broader base and understanding which covers almost every system of the body. This is because *Balya* is generally considered as that action which enhances *Bala*. According to the context where the word *Bala* is used, the action *Balya* also gets applied as per the definition. Hence the action *Balya* also gets a broader meaning and application like a type of *Hridya*, an action that results in an increase of *Ojus*, etc. Each of these were considered and briefed enough such that the exact nature of action with respect to *Balya* of *Ayurveda* can be determined. For this purpose all the activities under its purview are considered and broadly classified as mentioned above.

Generalized evaluation regarding the methods mentioned in the assessment of *Balya* action revealed that the method to analyze the same is examination of *Vyayama shakti*. This

is possible only when the person performs a good physical activity. Among the various tests that are available today, the TMT or treadmill stress test stands to be one of the most suitable ones for the purpose of assessing the magnitude of physical activity of the individual.

The TMT test is a method that renders the report on the condition of three major systems of the body namely musculoskeletal system, circulatory system and respiratory system. These three systems are either directly or indirectly involved with all the 7 *Dhatu*s (~tissues) of the body. Especially the musculoskeletal system is predominantly involved with *Mamsa* (~muscular tissue) and *Asthi* (~bone tissue); circulatory system is predominantly involved with *Rasa* (~nutritional fluids), *Rakta* (~blood cells), *Majja* (~bone marrow) and indirectly with *Shukra* (~semen) and respiratory system is predominantly associated indirectly with all the *Dhatu*s (~tissues) as it is the major supplier of oxygen which is responsible for almost all the chemical processes that are executed in the body.

Thus, along with the reading of VO_2 max intake, it also gives the idea on the condition of the metabolic status of the body too through the reading of MET. A clear portrait of health status with the three major systems is established with the test interpreting the readings pertaining to blood pressure, the cardiac output and the respiratory rate during different levels of stress along with the main readings. In the present context the measurement of VO_2 max will be useful to measure the capacity of the individual to sustain physical stress or *Vyayamashakti*. Thus, it is helpful in fulfilling the first dimension of *Balya* action. It also gives an idea of the individuals bioenergy in terms of MET which is useful to determine the second dimension of *Balya* action with regards to bioenergy.

Other effects those are resultant of *Balya* action are also to be assessed for complete review of the action. Laboratory investigations suggesting immunological condition and the quantitative changes as a result of drug effect could be immunoassay. There are various tests under immunoassay out of which ELISA, MELISA and radioimmunoassay could be useful to explain general status of the immune system in the body. These tests in turn can be interpreted as the ability of the body to face and counter the infiltration of various disease pathogens. Thus, the tests are helpful in resolving the second dimension of the *Balya* action with respect to *Vyadbikshamatva* (~immune system) of the body.

Even the fluid balance and the proteins present in the protective fluids of vital organs can be generally evaluated with the help of the complementary metabolic panel which has 14 investigations covering the functions of liver, kidney, plasma proteins.

The comprehensive metabolic panel comprises of those tests that are necessary that depict the functions of two vital organs namely the liver (serum total protein, serum albumin, serum bilirubin, serum alkaline phosphatase, serum AST or SGOT and serum ALT or SGPT) and kidney (BUN and serum creatinine). The two vital organs in-fact give the inference on the general condition of the body. This is because; the organ liver is one which is most important for metabolism as every nutrient material is screened by it upon absorption from the gut. The kidney on the other hand is the one that is mostly used pathway for the excretion of toxic materials or by-products of metabolism or bio-wastes that have resulted in the process of a series of chemical reactions in the body. Thus, any abnormality in the tests regarding these two organs usually depicts the pathological condition in the body usually resulting due to metabolism. It also helps in inferring the general condition of the body. Along with these the other tests together will help in ascertaining the changes in the general condition of the body. Thus giving further insight in the point where the drug has acted such that there is a notable improvement in the stamina, general health and well-being of the individual. Thus the tests of the panel will be useful in ascertaining the condition of various parts of the body thoroughly in general such that an inferential outcome can be evaluated with respect to various fluids that protect the vital organs of the body. Thus the tests help in the resolution of the third dimension of the *Balya* action.

Further investigations into the individual fluids like synovial fluid analysis can be undertaken if necessary such that the aspect of drug action can be still clear. But these tests are not recommended as it will result in deep interventions that may have adverse effects.

Thus, the present modern laboratory investigations as enlisted will be useful in giving a complete portrait of the *Balya* action with respect to an individual drug along with possible differentiation further.

CONCLUSION

Balya action mentioned in *Ayurveda* is a complex one, which unfolds many activities of the drug on deep analysis. Thus a comprehensive protocol involving many testing mechanisms is necessary for the evaluation and ascertainment of an activity of *Ayurveda* like *Balya*. Even though the physical activity is the main parameter for the evaluation of *Bala*, the other forms of *Bala* is not to be ignored while evaluating the activity of *Balya*. Hence it can be concluded that the combined approach of evaluation of the physical activity and bioenergy by TMT stress test, immunity by immunological assay and inference of

condition of protective or lubricating fluids of the body by the complementary metabolic panel is necessary for ascertaining *Balya* action of *Ayurveda*.

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