

Evaluation of Bhringarajadi Ghrita Rasayana in Premature Ageing

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ABSTRACT : Ageing is a process of unfavourable progressive changes associated with decline in vigour affecting the quality of life. It tends to vary in different age groups by genetic factors, dietary habits, socioeconomic conditions, life style, occurrence of diseases etc. Active ageing involves every dimension of one's life: Physical, mental, social & spiritual and major challenge is to understand & promote the factors that keep people healthy as they grow older. In Ayurveda, decade wise ageing process has been described. It has two types: Kalaja jara (Timely ageing), which may be delayed by appropriate measure & Akalaja jara (Premature ageing), which is somewhat reversible by Rasayana therapy. The present study deals with efficacy of Bhringarajadi Ghrita Rasayana (*Eclipta alba*, *Sesamum orientale* Linn., *Embellica officinalis* Gaertn., Sugar, Cow's ghee), which has shown significant improvement on various clinical parameters related to premature ageing since ingredients of this formulation have proven adaptogenic, antioxidant, free radical scavenger, immunomodulator properties.

Key words : Premature ageing, Bhringarajadi Ghrita, Rasayana, Anti oxidant, Immunomodulator, Free radicals.

INTRODUCTION

Ancient Indian wisdom - 'Ayurveda' is one of the most ancient medical sciences of the world. It covers all the spheres of human life including preservation & promotion of health and prevention & cure of diseases. The concept of ageing & rejuvenation finds a prominent place in Ayurvedic literature. Ageing involves two opposite processes i.e., atrophy & growth and denotes structural & functional changes of an organism throughout its lifespan. According to Ayurveda human physiology is well integrated with cosmic physiology.¹ The diurnal, seasonal & climatic variations & the biological clock for a wide spectrum of psychobiological changes occurring in the living organism as response to time factor have been receiving attention from the view point of chronobiology.

Ayurveda has considered the total span of life over 100 yrs. Sushruta has elaborated the childhood age up to 16 yrs. with predominance of Kapha and nourishment of body tissues, cognitive power & immunity followed by middle age (16 - 70 yrs.). The features characteristic to middle age described in the classics are: concurrent appearance of proper strength, virility, valour, courageousness, cognition, retention, recollection, good speech, knowledge with stability of body & mind and no degradation of qualities of dhatus. This phase of life is dominated by the activity of Pitta. Arunadatta adds that no development of dhatus takes place in middle age. Old

age (71-100 yrs.) is characterized by gradual decline of all the dhatus, indriyas & ojas with the appearance of graying & falling of hair, wrinkling of skin, senile cough, shortening of breaths etc. due to shoshana & kshaya.² Charaka has observed old age after 60 yrs. He mentions some other symptoms in the chapter of Rasayana like: flabbying of the muscles, looseness of joints, Vidaha (malfunction) of the blood, liquefaction of the adipose tissue, improper function of Majja, diminished semen, exhaustion, languid, excessive sleep, tremor, sluggishness (absence of enthusiasm), incapable of doing physical as well as labour work, loss of memory, intelligence and body luster. The man suffers from diseases frequently.³ He also adds mental faculties along with physical faculty like reduction in the capacity of perception, retention, recollection, speech & knowledge as vata dominates during this period.⁴ Vagbhatta further adds more that this phase of life is accompanied with tremors & reduced digestive capacity.⁵ Sharangadhara has described decade wise loss of different biological factors as a consequence of ageing in total life span of 100 yrs., which includes gradual loss of childhood, growth, beauty, intellect, health of skin, vision, reproductive capacity, vigour, wisdom & loco motor activity.⁶

Influence of diet & life style on Ageing :

Ageing includes the processes that occur during life which culminate in changes that decrease an individual's ability to cope up with biological changes. "A person's age is a mixture of three different ages: chronological, biological & psychological age. While first age cannot be changed, on the other two it is up to the individual how they influence them. The

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Biological Age is given by the state of our body. An active person in his/her 80s can have the muscle strength of a much younger person who is sedentary (inactive). UK experts agree also on the fact that the diet (or supplements) rich in essential amino acids and compound proteins can help strengthens the muscles. The Psychological Age depends a lot on the life's experiences and our attitude toward them. If we are depressed, if we think negative about one, if we are overwhelmed by the day-to-day worries, if we forget to smile, laugh and enjoy ourselves then we will definitely accelerate the Ageing Process."⁷

According to Ayurveda, Ageing is described of two types - Kalaja jara (Timely ageing) & Akalaja jara (Premature ageing).⁸ Jara coming at the proper age is Kalaja jara which is of less intensity, slow progressing one & less troublesome. This is nothing but chronological ageing. Whereas Akalaja jara is that which occurs before the prescribed age (60 yrs.). It is of greater intensity, rapidly progressing one, if neglected.

Improper dietary habits & life style are the root cause of all the diseases especially of premature ageing. In the classics, there is a detailed description related to those dietary habits & life style which maintain health as well as produce diseases. The dietary articles & defective life style responsible for vitiation of Doshas causing wear & tear in the body may also precipitate the ageing. These include: Dry vegetable & meat, incompatible diet, unfavourable diet, bakery items, alkali, dry cereals, heavy diet, contaminated & stale food, overeating, improper eating habits, excessive walk, day sleep, excessive intercourse, excessive intake of alcohol, improper exercise etc. As per Ayurvedic classics, the psychic factors are involved in almost all disease processes causing mental & physical disturbance. There are so many references given in the texts how the psychic factors affect the entire physiology of body & mind and give rise to the early manifestation of sign & symptoms of premature ageing. By screening different Ayurvedic texts, the etiological factors of ageing related to disturbed mental health are: bhaya (fear), krodha (anger), shoka (sorrow), lobha (greed), moha (affection), ruksha vani (harsh words), kalahpriya bharya (quarrelsome wife), & kuputra (maladroit son).⁹ As per recent advances, the incorrect life style includes; stress, addiction of alcohol & drinks based on caffeine, excessive TV watching, improper condition for sleeping, improper exercise or sedentary life style which are root causes of many diseases including ageing.

A variety of free radicals & Reactive Oxygen Species (ROS) are produced during cellular metabolism.

Excessive amount of these reactive molecules can cause damage, initiating the disease process, are believed to be the causative agents in almost all the diseases including ageing. The effective control of their concentrations may be helpful for prevention & treatment of ageing. It is a known fact that antioxidants, scavenge free radicals & ROS can render them harmless. Some of these antioxidants are produced in the body whereas others are obtained from food &/or dietary supplements including vitamins, herbs etc.¹⁰

Ageing & Rasayana :

Ayurveda is known to consider the phenomenon of ageing entirely from a new angle. It elaborates a comprehensive clinical discipline called 'Rasayana Tantra' devoted to the study of ageing & its prevention. Rasayana Tantra is a multifactorial approach taking care of the body, mind & spirit, thus affording a total well being of an individual. It affords a comprehensive physiological & metabolic restoration as is evident from the fundamental statement of Charaka i.e., "*Labhodayo hi shastanam tāsadinam rasayanam.*"¹¹

Rasayana is not the complete treatment of ageing, as it can just check or delay the process of ageing for sometime but it cannot be retarded and as soon as the effect of Rasayana finishes, the process of ageing starts again to march forward, so it is partially amenable. Rasayana stands as an answer to solve problem of healthful longevity including mental development & resistance against disease. Sushruta defines Rasayana as a measure which prolongs longevity, develops positive health, improves mental faculties and provides resistance & immunity against diseases. It is a specialized type of treatment influencing the fundamental aspects of the body viz., dhatus (body tissues), agni (metabolic activity) & srotamsi (micro circulation) and helps in prevention of ageing.¹² Moreover, consumption of Rasayana not only eradicates the signs of old age but also superimpose the youthful appearance. The Rasayana drugs are having different properties & actions like medhya, balya, dhatupushtikara, brimhaniya, jivaniya, agnivaradhaka etc.¹³ and also having proven pharmacological actions such as: adaptogenic, antioxidant, immunomodulator, antistress, hepatoprotective, tonics and other geriatric properties.¹⁴

MATERIAL & METHOD

Selection of Patients : Patients (30 to 60 yrs) attending O.P.D. of Dept. of Kayachikitsa, Panchakarma & Manasa Roga, I.P.G.T. & R.A. Hospital, having sign and symptoms of premature ageing irrespective of their sex, religion etc. had been selected after excluding diseases

like diabetes mellitus, heart disease, hemiplegia etc. A special research proforma was prepared incorporating all sign and symptoms of Premature Ageing, Health Parameters, Mental Health, Dosha, Dhatukshaya, Srotodushti, Ojodushti and Sara based on Ayurvedic and modern medical literature. Routine haematological & biochemical parameters had also been done before & after the trial therapy.

Selected Drug : Bhringarajadi Rasayana (Bhaishajya Ratnavali - Rasayanadhikara)¹⁵

Dose : 10 gm twice a day (orally)

Anupana : luke warm water

Duration : 2 months

Follow up : 1 month.

Plain Goghrita (Cow's ghee) was administered as per above mentioned schedule to serve as control in a separate group of patients.

In both the groups, Haritaki Churna - 5 gms was administered once a day with luke warm water in early morning for koshta & srotas shuddhi for 5 days duration before starting the Rasayana therapy.

Bhringarajadi Ghrita Rasayana

Ingredients :

1. Bhringaraja (*Eclipta alba* Hassk.)
2. Krishna Tila (*Sesamum orientale* Linn.)
3. Amalaki (*Embelica officinalis* Gaertn.)
4. Mishri (Sugar)
5. Godugdha (Cow milk)
6. Goghrita (Cow's ghee)

Procedure :

Bhringarajadi Ghrita was prepared as per Snehapaka kalpana.

Kalka (1 part) was prepared from :	Fresh Amalaki - 2 parts Krishna Tila - 1 part Mishri - 1 part
Cow's ghee	4 part
Liquid Media :	Water- 16 parts Milk - 16 parts Bhringaraja Swarasa- 16 part

TABLE NO. 1 : PHARMACOLOGICAL PROPERTIES OF BHRINGARAJADI GHRITA :

Ingredients	Rasa	Guna	Virya	Vipaka	Prabhava	Doshagnata
Bhringaraja (<i>Eclipta alba</i>)	Katu, Tikta	Ruksha, Laghu	Ushna	Katu	-	Kaphavatahara
Krishna Tila (<i>Sesamum orientale</i>)	Madhura Anurasa- Kashaya, Tikta	Guru, Snigdha	Ushna	Madhura	Keshya	Tridoshashamaka
Amalaki (<i>Embelica officinalis</i>)	Amla pradhana lavana rahita pancharasa	Laghu, Ruksha, Sheeta	Sheeta	Madhura	-	Tridoshahara
Sharkara (Sugar)	Madhura	Sheeta, Sara	Sheeta	Madhura	-	Pittashamaka
Cow milk	Madhura	Guru, Snigdha	Sheeta	Madhura	-	Vatapittashamaka
Cow ghee	Madhura	Guru, Snigdha	Sheeta	Madhura	Medhya	Vatapittahara

TABLE NO. 2 : PHARMACODYNAMICS OF BHRINGARAJADI GHRITA :

Ingredients	Karma	Pharmacological Action
Bhringaraja (<i>Eclipta alba</i>)	Rasayana, Raktaprasadana, Vajjkarana, Keshavardhana, Chakshushya	Antioxidant, hepatoprotective, promoter for blackening and growth of hair
Krishna Tila (<i>Sesamum orientale</i>)	Rasayana, Balya, Vrishya, Keshya, Medhya, Snehana	Antioxidant, free radical scavenging activity, hepatoprotective
Amalaki (<i>Embelica officinalis</i>)	Rasayana, Medhya, Keshya, Chakshushya, Balya	Antioxidant, Immunomodulator, HIV-I reverse transcriptase inhibitory action, antiatherosclerotic

Criteria for Assessment :

- Assessment has been done clinically on the basis of decrease in clinical parameters (Signs & Symptoms) and improvement in certain physical parameters.
- Influence of psychological factors affecting the *Ageing Process* has been assessed on standard Ayurvedic parameters- Manasika Bhava before and after the treatment.
- Mental health of the patients has been evaluated on the basis of Brief Psychiatric Rating Scale along with Hamilton Anxiety Rating Scale and Hamilton Depression Rating Scale before and after the treatment.
- Results have been assessed for the relief in mental & physical sign and symptoms that had been graded and statistically analyzed.

The patients were assessed and evaluated by following criteria of gradation of Chief Complaints.

Investigator's Rating for Ageing (Shukla Devangi & Chandola H.M. 2007)¹⁶

Twak Parushata (Dryness of skin) :

- a. No dryness - 0
- b. Scratches can be made on the skin - 1
- c. Skin looks dry but not cracked - 2
- d. Skin looks dry with cracks - 3

Slatha sara (Flabbiness of the body) :

- a. Never feels body loose & weak - 0
- b. Occasionally feels body loose & soft - 1
- c. Often feels body weak - 2
- d. Always feel loose & weak body - 3

Slatha Mamsa (Decreased muscle tone) :

- a. Do not feel tired after exertion - 0
- b. Occasionally feel tired after exertion - 1
- c. Often feel tired after exertion - 2
- d. Always feel tired even at rest - 3

Slatha Asthi (Bone weakness) :

- a. No bony pain - 0
- b. Occasional bony pain on pressure - 1
- c. Often feel discomfort and bony pain during light exertion - 2
- d. Dull aching pain even during rest - 3

Slatha Sandhi (Flaccid joint) :

- a. No pain in the joint - 0
- b. Occasionally feels pain & crackling sounds in the joints during movement - 1
- c. Often feels pain & crackling sounds in the joints during movement - 2
- d. Always feel pain & crackling sounds in the joints during movements - 3

Dhatu Kshaya (Loss of tissues) :

- a. Absence of Dhatu kshaya symptoms - 0
- b. Mild presence of Dhatu Kshaya symptoms - 1
- c. Moderate presence of Dhatu Kshaya symptoms - 2
- d. Severe presence of Dhatu Kshaya symptoms - 3

Kayasya Avanamanam (Bending of the body) :

- a. No bending of the body - 0
- b. Mild bending of the body - 1
- c. Moderate bending of the body - 2
- d. Severe bending of the body - 3

Vepathu (Tremors) :

- a. No tremors - 0
- b. Occasional tremors - 1
- c. Often tremors - 2
- d. Always tremors - 3

Khalitya (Falling of hairs) :

- a. No hair falling - 0
- b. Hair falling once in the morning while combing - 1
- c. Hair falling during every time combing - 2
- d. Visible baldness - 3

Vali (Wrinkling) :

- a. No wrinkling - 0
- b. After skin raising, wrinkle subsides early - 1
- c. After skin raising, wrinkle persist for longer duration - 2
- d. Wrinkle visible even without raising the skin - 3

Palitya (Graying of hairs) :

- a. No graying of hairs - 0
- b. Very few gray hairs - 1
- c. Partial graying of hairs - 2
- d. Sufficient graying of hairs - 3

Kasa (Coughing) :		c. Often feels decrease in enthusiasm	- 2
a. No coughing	- 0	d. Always feels decrease in enthusiasm	- 3
b. Occasional coughing	- 1	Parakrama hani (Decreased Physical Strength) :	
c. Recurrent coughing	- 2	a. No decrease in physical strength	- 0
d. Always coughing	- 3	b. Occasionally feels decrease in physical Strength	- 1
Shwasa (Short breath) :		c. Often feels decrease in physical strength	- 2
a. No breathlessness	- 0	d. Always feels decrease in physical strength	- 3
b. Occasionally breathlessness	- 1	Paurusha hani (Decreased Virility) :	
c. Often breathlessness on exertion	- 2	a. No decreased virility	- 0
d. Breathlessness even without exertion	- 3	b. Occasionally feels decreased virility	- 1
Medha hani (Decreased functions of Intellect) :		c. Often feels decreased virility	- 2
a. Grahana (Grasping Power)		d. Always feels decreased virility	- 3
i. No deterioration in grasping power	- 0	Prabha hani / Chhavi Hras (Changes in Complexion):	
ii. Occasionally fails to grasp the subject	- 1	a. No changes in complexion	- 0
iii. Often fails to grasp the subject	- 2	b. Mild changes in complexion	- 1
iv. Always fails to grasp the subject	- 3	c. Moderate changes in complexion	- 2
b. Dharana (Retention Power) :		d. Severe changes in complexion	- 3
i. No deterioration in retention power	- 0	Shukra Kshaya	
ii. Occasionally fails to retain/hold up the Subject	- 1	a. Absence of shukra kshaya symptoms	- 0
iii. Often fails to retain/hold up the subject	- 2	b. Mild presence of shukra kshaya symptoms	- 1
iv. Always fails to retain/hold up the Subject	- 3	c. Moderate presence of shukra kshaya symptoms	- 2
c. Smarana (Memory Power) :		d. Severe presence of shukra kshaya symptoms	- 3
i. No deterioration in memory	- 0	Drishti Hras (Diminished Vision) :	
ii. Occasionally fails to remember the things	- 1	a. No diminished vision	- 0
iii. Often fails to remember the things	- 2	b. Mild loss of range of visual accommodation	- 1
iv. Always fails to remember the things	- 3	c. Moderate loss of range of visual accommodation-	- 2
d. Vachana (Speech) :		d. Severe loss of range of visual accommodation	- 3
i. No deterioration in speech	- 0	Karmendriya hani (Decreased Loco motor Activities):	
ii. Occasionally feels problem in speaking	- 1	a. No decrease in loco motor activities	- 0
iii. Often feels problem in speaking	- 2	b. Mild decrease in loco motor activities	- 1
iv. Always feels problem in speaking	- 3	c. Moderate decrease in loco motor activities	- 2
e. Vijnana (Knowledge) (Vijnanam Vyavsayena) (Chakrapani) :		d. Severe decrease in loco motor activities	- 3
i. Normal functioning in routine	- 0	Buddhi hani (Deterioration in Wisdom) :	
ii. Gradual hampered performance in functions	- 1	a. No deterioration in wisdom	- 0
iii. Impaired motivation towards functioning often-	- 2	b. Mild deterioration in judgment based on knowledge & experience	- 1
iv. Loss of pace and motivation in functioning	- 3	c. Moderate deterioration in judgment based on knowledge & experience	- 2
Utsaha hani (Decreased Enthusiasm) :		d. Severe deterioration in judgment based on knowledge & experience	- 3
a. No decrease in enthusiasm	- 0		
b. Occasionally feels decrease in enthusiasm	- 1		

Gradation of Associated symptoms :**Indigestion :**

(Symptoms of indigestion - nausea, belching, gas bloating, heartburn, cramps brought on eating)

- a. Absence of the symptoms - 0
 b. Presence of the some of the symptoms - 1
 c. Presence of moderate symptoms - 2
 d. Severe presence of the symptoms - 3

Altered Bowel pattern :

- a. No disturbance in bowel - 0
 b. Occasional disturbance in bowel - 1
 c. Often disturbance in bowel - 2
 d. Always disturbance in bowel - 3

Altered Sleep pattern :

- a. No disturbance in sleep - 0
 b. Occasionally disturbance in sleep - 1
 c. Often disturbance in sleep - 2
 d. Always disturbance in sleep - 3

Palpitation :

- a. Absent - 0
 b. Occasionally - 1
 c. Only on exertion & anxiety - 2
 d. Without exertion & anxiety - 3

Anger :

- a. No anger - 0
 b. Occasionally feels anger - 1
 c. Often feels anger while excited - 2
 d. Always feels anger - 3

Irritability :

- a. No irritability - 0
 b. Occasionally feels irritable - 1
 c. Often feels irritable - 2
 d. Always feels irritable - 3

Early Menopause :

(Symptoms of Menopause - menstrual irregularity, hot flushes, irritability, increased weight, osteoporosis, atrophy of female reproductive tissues)

- a. Absence of the symptoms - 0
 b. Mild presence of the symptoms - 1
 c. Moderate presence of the symptoms - 2
 d. Severe presence of the symptoms - 3

Altered Urinary Symptoms :

(Obstructive uropathy, overflow incontinence, stress incontinence)

- a. Absence of the symptoms - 0
 b. Mild symptoms present - 1
 c. Moderate symptoms present - 2
 d. Severe symptoms present - 3

Recurrent Infections :

(Susceptibility to infection related to Respiratory, Gastrointestinal, Genito-urinary, Skin etc.)

- a. No recurrent infection - 0
 b. Mild presence of the symptoms - 1
 c. Moderate presence of the symptoms - 2
 d. Severe presence of the symptoms - 3

Fatigue :

- a. No fatigue - 0
 b. Mild fatigue after exertion - 1
 c. Moderate fatigue after exertion - 2
 d. Fatigue even at rest - 3

Weakness :

- a. No weakness - 0
 b. Slight feeling of weakness - 1
 c. Feeling weakness but can do duties - 2
 d. Feeling so weak that can't perform duties - 3

Loss of Hearing :

- a. No difficulty in hearing - 0
 b. Mild difficulty in hearing - 1
 c. Moderate difficulty in hearing - 2
 d. Severe difficulty in hearing - 3

Weakening of Teeth :

- a. No weakening of teeth - 0
 b. Mild weakening of teeth - 1
 c. Moderate weakening of teeth - 2
 d. Severe weakening of teeth - 3

Gradation of Dosha Vriddhi, Kshaya & Prakopa; Dhatu & Mala Kshaya, Vriddhi; Ojodushti & Srotodushti symptoms had been done in following manner :

- A. No Symptoms present - 0
 B. 25 % symptoms present - 1

C. 50 % symptoms present	- 2	Clinical Study
D. 75 % symptoms present	- 3	Out of 19 patients of premature ageing, 15 had completed the course of treatment. In Bhringarajadi Ghrita administered Group 9 patients had completed treatment whereas in Plain Cow ghee Group, 6 patients had completed the treatment. These patients had been assessed by gradation of chief complaints, associated complaints, health parameters, Manasika bhava, dosha vridhhi, kshaya, prakopa, dhatukshaya, malakshaya, vridhhi, ojedushti, srotodushti, sara pariksha & objectively by using Hamilton Anxiety Rating Scale, Hamilton Depression Rating Scale & Brief Psychiatry Rating Scale.
E. 100 % symptoms present	- 4	
Gradation of Sara Pariksha :		
A. All Symptoms present	- 0	
B. 75 % symptoms present	- 1	
C. 50 % symptoms present	- 2	
D. 25 % symptoms present	- 3	
E. 0 % symptoms present	- 4	

OBSERVATION & RESULTS

TABLE NO. 3 : EFFECT OF BHRINGARAJADI GHRITA RASAYANA ON CLINICAL PARAMETERS (SIGNS & SYMPTOMS):

Symptoms	Mean score			% Relief	SD	SE	t	p
	BT	AT	D					
Twak parushata	2.12	0.62	1.5	70.59	0.53	0.19	7.94	<0.001
Slatha Sara	1.78	0.22	1.56	87.5	0.53	0.18	8.85	<0.001
Slatha Mamsa	1.67	0.17	1.5	90	0.55	0.22	6.71	<0.01
Slatha Asthi	1.83	0.5	1.33	72.73	0.52	0.21	6.32	<0.01
Slatha Sandhi	1.5	0.33	1.17	77.78	0.75	0.31	3.8	<0.05
Dhatu Kshaya	1.33	0.33	1	75	0.5	0.17	6	<0.001
Kayasya Avanamana	2	1	1	50	0	0	0	N.S.
Vepathu	2	0	2	100	0	0	0	N.S.
Khalitya	2.67	0.67	1.33	66.67	0.5	0.17	8	<0.001
Vali	1.56	0.44	1.11	71.43	0.33	0.11	10	<0.001
Palitya	2.11	0.89	1.22	57.89	0.44	0.15	8.31	<0.001
Kasa	1.25	0.25	1	80	0.53	0.19	5.29	<0.01
Shwasa	1.5	0.75	0.75	50	0.96	0.48	1.57	>0.10
Medha hani								
♦ Grahana hani	1.88	1.25	0.63	33.33	0.51	0.18	3.41	<0.05
♦ Dharana hani	1.63	1	0.63	38.46	0.52	0.18	3.42	<0.05
♦ Smarana hani	1.33	1	0.33	25	0.5	0.17	2	>0.05
♦ Vijnana hani	1.1	0.75	0.25	25	0.5	0.25	1	>0.10
♦ Vachana hani	1	1	0	0	0	0	0	N.S.
Utsaha hani	1.75	0.38	1.38	78.57	0.52	0.18	7.51	<0.001
Parakrama hani	1.78	0.67	1.11	62.5	0.33	0.11	10	<0.001
Paurush hani	0.75	0	0.75	100	0.5	0.25	3	>0.05
Prabha hani	1.56	0.78	0.78	50	0.44	0.15	5.29	<0.001
Shukra Kshaya	1	0.25	0.75	75	0.5	0.25	3	>0.05
Drishti Hras	1	0	1	0	0	0	0	N.S.
Karmendriya hani	1	0.5	0.5	50	0.58	0.29	1.73	>0.10
Buddhi hani	1	0.25	0.75	75	0.5	0.25	3	>0.05

N.S. - Not significant

TABLE NO. 4 : EFFECT OF BHRINGARAJADI GHRITA ON CERTAIN PHYSICAL PARAMETERS :

Parameters	Mean score		% Relief	SD	SE	t	p	
	BT	AT						
Walking Time (seconds)	5.71	6.28	3.57	0.52	0.19	3.96	<0.01	
Hand Grip Power (mm Hg)	71.42	95.71	25.37	4.55	1.87	12.98	<0.001	
Foot Pressure (Kg)	28.71	30.28	5.46	1.29	0.49	3.21	<0.01	
Short Term Memory	1.97	2.0	62.69	0.73	0.28	1.56	>0.05	
Long term memory	1.85	2.79	31.36	0.35	0.13	6.48	<0.05	
Breath holding time (sec.)	19.71	22.42	12.08	2.0	0.75	3.97	<0.01	
Pulse (Per min.)	79.0	74.14	6.18	2.75	1.03	4.68	<0.01	
Blood pressure (mm Hg)	Systolic	132.28	128.2	3.34	0.78	0.26	4.26	>0.05
	Diastolic	84.25	82.56	15.06	1.05	0.37	3.02	<0.05
Weight (kg)	51.71	53.14	2.74	0.90	0.34	4.18	<0.01	

TABLE NO. 5 : EFFECT OF PLAIN COW'S GHEE ON CLINICAL PARAMETERS (SIGNS & SYMPTOMS) :

Symptoms	Mean score			% Relief	SD	SE	t	p
	BT	AT	D					
Twak Parushata	2.33	1.33	1	42.86	0.63	0.26	3.88	<0.05
Slatha Sara	2.17	1.33	0.83	38.46	0.41	0.57	5	<0.01
Slatha Mamsa	2.33	1.83	0.5	21.43	0.45	0.22	2.33	>0.05
Slatha Asthi	2.2	1.2	1	45.45	0.71	0.32	3.16	>0.05
Slatha Sandhi	2	1	1	50	0	0	0	N.S.
Dhatu Kshaya	2	1.33	0.67	33.33	0.52	0.21	3.16	<0.05
Kayasya Avanamana	1.5	1.5	0.5	33.33	0.71	0.5	1	>0.10
Vepathu	1.5	1	0.5	33.33	1	0.5	1	>0.10
Khalitya	2.5	2	0.5	20	0.55	0.22	2.24	>0.05
Vali	2.33	1.33	1	42.85	0.63	0.26	3.87	<0.05
Palitya	2.67	2.67	0	0	0	0	0	N.S.
Kasa	1.75	1.5	0.25	14.29	0.5	0.25	1	>0.10
Shwasa	1.4	1.2	0.2	14.29	0.45	0.2	1	>0.10
Medha hani								
♦ Grahana hani	2.17	1.83	0.33	15.38	0.52	0.21	1.58	>0.10
♦ Dharana hani	2.17	2	0.17	7.69	0.41	0.17	1	>0.10
♦ Smarana hani	1.83	1.5	0.33	18.18	0.51	0.21	1.58	>0.10
♦ Vijnana hani	1.5	0.75	0.75	50	0.96	0.48	1.57	>0.10
♦ Vachana hani	1	0.8	0.2	20	0.45	0.2	1	>0.10
Utsaha hani	2	1.33	0.67	33.33	0.52	0.21	3.16	<0.05
Parakrama hani	2	1.5	0.5	25	0.55	0.22	2.24	<0.05
Paurush hani	2	2	0	0	0	0	0	N.S.
Prabha hani	2.17	1.83	0.33	15.38	0.52	0.2	1.58	>0.10
Shukra Kshaya	2	1	1	50	0	0	0	N.S.
Drishti Hras	1	1	0	0	0	0	0	N.S.
Karmendriya hani	1	0.8	0.2	20	0.45	0.2	1	>0.10
Buddhi hani	1.2	0.6	0.6	50	0.55	0.25	2.45	>0.05

TABLE NO. 6 : PLAIN COW'S GHEE ON CERTAIN PHYSICAL PARAMETERS :

Parameters	Mean score		% Relief	SD	SE	t	p
	BT	AT					
Walking Time (seconds)	8.5	7.37	5.56	1.23	0.45	2.12	>0.05
Hand Grip Power (mm Hg.)	76.5	95	10.76	13.5	5.67	4.53	>0.05
Foot Pressure(Kg)	22.60	29	4.72	1.11	0.39	3.50	<0.01
Short Term Memory	0.55	1.45	43.70	0.34	0.11	2.65	>0.05
Long term memory	1.3	1.41	9.28	4.5	2.17	2.33	>0.05
Breath holding time (sec.)	29.32	25.17	7.77	0.73	0.49	5.67	<0.01
Pulse (Per min.)	79.12	77.82	4.75	1.94	1.68	5.11	<0.01
Blood Systolic pressure	126.64	123.8	3.29	0.60	0.27	3.00	>0.05
Diastolic (mm Hg)	88.45	89.26	1.34	0.77	0.63	3.26	>0.05
Weight (kg) .	56.37	57.45	1.74	1.27	0.43	3.79	<0.01

TABLE NO. 7 : COMPARISON BETWEEN EFFECT OF BHRINGARAJADI GHRITA & PLAIN GOGHRITA (CONTROL) ON CHIEF COMPLAINTS :

Chief Complaints	Plain Ghrita (PG) (Control)	Bhringarajadi Ghrita (BG)	
	MEAN ± SEM	MEAN ± SEM	% Change (comparison with PG)
Twak Parushata	1.00 ± 0.26	1.50 ± 0.19	50 ↑
Slatha Sara	0.83 ± 0.17	1.67 ± 0.17*	101.2 ↑
Slatha Mamsa	0.50 ± 0.22	1.50 ± 0.22*	200 ↑
Slatha Asthi	1.00 ± 0.32	1.33 ± 0.54	33.0 ↑
Slatha Sandhi	1.00 ± 0.00	1.00 ± 0.37	0.00
Dhatu Kshaya	0.67 ± 0.21	0.89 ± 0.11 *	08.96 ↑
Vepathu	0.50 ± 0.50	2.00 ± 0.00*	300 ↑
Khalitya	0.50 ± 0.22	1.11 ± 0.11*	122 ↑
Vali	1.00 ± 0.26	1.22 ± 0.15	22 ↑
Palitya	0.00 ± 0.00	1.11 ± 0.11**	0.00
Kasa	0.25 ± 0.25	1.29 ± 0.18*	416 ↑
Shwasa	0.20 ± 0.20	1.25 ± 0.05*	525 ↑
Medha hani			
• Grahana hani	0.33 ± 0.21	0.63 ± 0.18	90.91 ↑
• Dharana hani	0.17 ± 0.17	0.63 ± 0.18	270.6 ↑
• Smarana hani	0.33 ± 0.21	0.33 ± 0.17	0.00
• Vijnana hani	0.00 ± 0.00	0.05 ± 0.00	0.00
• Vachana hani	0.25 ± 0.25	0.25 ± 0.25	0.00
Utsaha hani	0.50 ± 0.22	1.13 ± 0.23	126 ↑
Parakrama hani	0.33 ± 0.21	1.00 ± 0.17*	203 ↑
Paurush hani	0.00 ± 0.00	1.00 ± 0.00	0.00
Prabha hani	0.33 ± 0.21	0.89 ± 0.11 *	169.7 ↑
Shukra Kshaya	1.00 ± 0.00	0.75 ± 0.25	25 ↓
Karmendriya hani	0.00 ± 0.00	0.50 ± 0.29	0.00
Buddhi hani	0.80 ± 0.20	0.75 ± 0.25	6.25 ↓

*Significant (p< 0.01, <0.05) ↑ Increase, ↓ Decrease

** Highly Significant (p<0.001) [Unpaired 't' Test]

Effect of Bhringarajadi Ghrita (BG) :

Chief Complaints : Highly significant relief ($p < 0.001$) was found in: twak parushata (70.59%), slatha sara (87.50%), dhatukshaya (75%), khalitya (66.67%), vali (71.43%), palitya (57.89%), utsahahani (78.57%), parakramahani (62.50%) and prabhahani (50 %) with significant relief ($p < 0.05$, $p < 0.01$) in : slatha mamsa (90%), slatha asthi (72.73%), slatha sandhi (77.78%), kasa (80%), grahanahani (33.33%) and dharanahani (38.46%). **On Associated Symptoms**, BG showed highly significant relief in: disturbed sleep (80%), fatigue (73.68%) and weakness (93.33%) with significant relief in constipation (90.91 %) and insignificant relief in palpitation (80%), anger (66.67%) and early menopause (42.86%).

On *disturbed Manasika Bhava*, BG showed highly significant decrease in negative emotions like: krodha (46.67%), shoka (53.33%), vishada (53.33%), chinta (52.63%) and manasa (53.33%) with significantly decrease in rajah (37.50%) and insignificant decrease in bhaya (25%), dwesha (11.11 %) & moha (6.67%). On the other hand highly significant increase was observed in positive emotions like: priti (40%), virya (40%), avasthana (58.33%), vijnana (36.36%) & samgya (36.36%) with insignificant increase in: dhairya (18.18%), dhriti (25%), harsha (28.5%), shraddha (8.33%), upadhi (37.5%), vashyata (16.67%), shila (42.86%) & smriti (25%). On *Hamilton Anxiety Rating Scale*, the formulation showed highly significant results in: insomnia (64.29%), GI symptoms (75%) & ANS (75%). Whereas anxious mood (47.06%), tension (25%), CVS symptoms (50%), GU symptoms (57.14%) were significantly relieved. The symptomatic relief was insignificant in: fear (25%), intellectual (20%), and depressed mood (18.18%). On *Hamilton Depression Rating Scale*, BG showed highly significant result in: work interest & activities (63.64%), retardation (63.64%), psychic anxiety (46.67%), somatic anxiety (57.14%) with significant relief in: depressed mood (38.46%) & feeling of guilt (55.56%) and insignificant relief in: insomnia (61.54%), agitation (100%), general somatic symptom (42.85%) & GIT symptom (69.23%). On *Brief Psychiatry Rating Scale*, the formulation showed highly significant result in tension (42.11%) with significant relief in anxiety (36.84%) & guilt (55.56%) and the result was insignificant in somatic concern (37.5%) & emotional withdrawal (33.33%).

Evaluating the effect of BG on *Dosha*, significant relief was observed in : Vatavridhhi (45.45%), Vatakshaya (71.42%), Vataprakopa (71.43%), Pittavridhhi (71.42%), Pittakshaya (53.33%) and Kaphakshaya (45.45%). It failed to show significant relief on Pittaprakopa (100%),

Kaphavridhhi (33.33%) and Kaphaprakopa (100%). On *Dhatu Kshaya Lakshana*, BG showed significant relief in : Rasakshaya (75%), raktakshaya (58.33%), mamsakshaya (63.64%), medakshaya (55.56%), asthikshaya (60%) and majjakshaya (75%). Shukrakshaya was relieved insignificantly (75%). On Srotodushti, the drug showed highly significant relief in rasavahasrotas (78.57%) with significant relief in: udakavahasrotas (100%), annavahasrotas (88.89%) & medavahasrotas (83.33%). It failed to show significant relief in: pranavahasrotas (100%), raktavahasrotas (100%), majjavahasrotas (50%), shukravahasrotas (100%), mutravahasrotas (100%), purishvahasrotas (100%), swedavahasrotas (100%) & artavavahasrotas (33.33%). On *Dhatu Sara*, the formulation showed significant improvement in twaksara (28.57%), raktasara (26.32%), medasara (21.05%) and shukrasara (23.52%) with insignificant improvement in mamsasara (18.75%), asthisara (18.75%), majjasara (11.76%) & satvasara (12.5%). On Ojodushti, the drug showed significant relief in ojoyvayapada (80%) & ojavisramsya (66.67%) with insignificant improvement in ojakshaya (60%).

On haematological & biochemical parameters, the Bhringarajadi Ghrita showed increase in Hb (1.75%) & HDL (4.25%) while decrease in ESR (19.24%) & LDL (1.23%) which was statistically insignificant. The effect on *Health Parameters*, highly significant improvement was found in hand grip power (25.37%) with significant improvement in: walking time (3.57%), foot pressure (5.46%), breath holding time (12.08%), pulse (6.18%) & weight (2.74%).

Analyzing the *Overall Effect*, Bhringarajadi Ghrita showed Marked improvement in 11.11 % patients, Moderate improvement 77.78% patients and Mild improvement in 11.11 % patients. (Table No. 3-4)

Effect of Plain Goghrita (PG) :

On chief Complaints- PG showed significant relief ($p < 0.05$, $p < 0.01$) in: twak parushata (42.86%), slathasara (38.46%), dhatukshaya (33.33%), vali (42.85%), utsaha hani (33.33%) & parakramahani (25%). **Associated Symptoms :** Significant relief was found in : constipation (87.05%), disturbed sleep (75%), irritability (50%) & fatigue (32%) with insignificant relief in indigestion (11.11 %), palpitation (25%), anger (40%), early menopause (11.11 %), recurrent infection (12.50%) & weakness (31.25%).

Disturbed Manasikabhava (Emotions)- Significant decrease in Negative Emotions chinta (26.67%) with insignificant relief in: bhaya (8.33%), krodha (25%), shoka (25%), dwesha (18.18%), rajah (16.67%),

vishada (25%), moha (16.67%), manasa (16.67%) & hriya (27.27%). Significant improvement recorded in Positive Emotions like shraddha (44.44%), smriti (26.67%) & medha (28.57%). Plain Goghrita failed to show any significant symptomatic relief on *Hamilton Anxiety Rating Scale, Hamilton Depression Rating Scale and Brief Psychiatry Rating Scale*.

On *Dosha*, PG showed significant relief in Vatavridhi (53.85%), Vataprakopa (55.55%), Pittakshaya (43.75%) & Kaphakshaya (50%) with insignificant relief in Vatakshaya (44.44%) & Pittavridhi (50%). On *Dhatu Kshaya*, significant relief on rasakshaya only (38.46%) while other Dhatukshaya showed statistically insignificant relief. *Srotodushti*- Significant relief in rasavahasrotas (38.46%), asthivahasrotas (40%) & purishavahasrotas (85.71 %) with insignificant relief in pranavahasrotas (50%), annavahasrotas (16.67%), raktavahasrotas (25%), mamsavahasrotas (40%), medovahasrotas (25%), shukravahasrotas (50%) & mutravahasrotas (40%). *Dhatu Sara*- PG failed to show significant improvement. *Ojodushti*- Insignificant results in: ojavyapada (50%), ojavisramsas (40%) and ojakshaya (11.11 %).

Haematological & Biochemical Parameters- Significant decrease in S. Cholesterol (3.56%) and increase in S. Protein (1.57%) and A/G Ratio (0.14%). Rest parameters were statistically insignificant. *Health parameters*- Significant improvement in: foot pressure (4.72%), breath holding time (7.77%), pulse (4.75%) and weight (1.74%).

Analyzing the *Overall Effect*, the Plain Goghrita showed Moderate improvement in 33.33% patients, Mild Improvement in 16.67%, whereas 50% patients remained unchanged (Table No. 5 & 6).

In comparison to PG, BG showed highly significant relief in palitya & significant relief in slatha sara, slatha mamsa, dhatukshaya, vepathu, khalitya, kasa, shwasa, parakrama hani, prabha hani (Table No. 7).

DISCUSSION

The Bhringarajadi Ghrita Rasayana has been described as one of the best dhatupushtikara & rejuvenator type of Rasayana in classical texts. The Vata dosha is highly vitiated in jaravastha, dhatu kshaya and other sign & symptoms of Jara arise due to vatavridhi. The formulation counteracts vata due to its guru and snigdha guna; madhura rasa & vipaka; and dhatu pushtikara karma. Due to its rochana, dipana & pachana karma, it increases the Agni, which in turn influences dhatvagni and pacify the Ama dosha, which is the root cause of all the disease. Proper Agni improves the

process of regeneration of all the dhatus. So the formulation increases proper digestion and gives better nutrition to every cell through increasing microcirculation into each & every srotas and leads to more anabolic activity than the catabolic activity, which ultimately gives best quality of dhatus and slows down the *ageing process*. Madhura rasa, madhura vipaka and snigdha guna present in the drug help to increase dhatu, especially saumya dhatu that form the major portion of the body and also having keshya Prabhava, by which it can combat the cardinal sign of *ageing* i.e. dhatu kshaya, khalitya & palitya. Ingredients of the formulation also having properties like: antioxidant, anti atherosclerotic, immunomodulator, free radical scavenging activity, anti hepatotoxic & hepatoprotective, adrenergic potentiating, HIV -I reverse transcriptase inhibitory action, hypolipidaemic, delta-5 desaturase inhibiting activity etc.¹⁴ which can delay the process of *ageing*. But In pharmacological study¹⁷, Bhringarajadi Ghrita showed not so much significant results in CNS activity, anti depressant activity, anxiolytic activity, antistress & adaptogenic activity, haematological & biochemical parameters and DHEA-S (Dehydro Epiandrosterone Sulfate). Plain Goghrita is the best Ajasrika Rasayana, medhya, balya, ojovardhaka, agnidipana etc. Ghrita pacifies pitta and vata, increases rasa, shukra and ojas. It also produce nirvapanas, mriduta enhances svara and varna¹⁸. Ghee pacifies vata by sneha guna and pitta by its sheeta guna and kapha having equal quality by samskara.¹⁹ It is agnivardhaka, vrishya, medhavardhaka, chakshushya, vayasthapak and rasayana.

In comparison to Plain Goghrita, Bhringarajadi Ghrita showed significant result in slatha sara, slatha mamsa, dhatu kshaya, vepathu, khalitya, kasa, shwasa, parakrama hani and prabha hani whereas highly significant result in palitya.

CONCLUSION

The main etiological factors of Premature ageing, chronic stressful lifestyle & incorrect dietary habits leads to derangement in sharirika and manasika dosha by agnidushti and amotpatti (free radical generation) which gradually leads to dhatukshaya starting at cell level. The sign & symptoms of ageing may get manifested due to dhatukshaya by vata vriddhi & prakopa or ama. Ama has characteristics similar to free radicals.¹⁶ Bhringarajadi Ghrita subsides aggravated dosha, remove Ama and overcome dhatu kshaya. When these are counteracted naturally, there will be samyata in dhatvagni; srotas will be free from avarodha; rasa moves all over the body through minute channels, thereby enables dhatu to get rasa. When the dhatvagnis are normally functioning, they

help to form prashasta dhatu resulting in pushti of dhatu and bala of sharira. So a Rasayana drug like Bhringarajadi Ghrita, may act at the level of dhatvagni and leads to correction of the sign & symptoms of Premature ageing - dhatu kshaya by subsiding sharirika & manasika dosha and balancing agni. Therefore, the key to attain healthy ageing is - correct life style and positive approach towards health problems in early stage and intake of a good Rasayana remedy before ageing starts.

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हिन्दी सारांश

अकालज जरा में भृंगराजादिघृत के प्रभाव का अध्ययन

देवांगी एन. ओझा, ईला तन्ना, बी. रविशंकर एवं एच. एम. चन्दोला

जरा एक स्वाभाविक प्रक्रिया है जिसके कारण शरीर में ऊर्जा और बल का हास होता है। यह प्रक्रिया आनुवांशिकी, आहार-विहार जनित जीवनशैली, आर्थिक-सामाजिक परिस्थिति और शरीर पर रोगों का प्रभाव जैसे अनेक कारणों द्वारा प्रभावित होती है। इसके कारण व्यक्ति का शारीरिक, मानसिक और आध्यात्मिक स्वास्थ्य प्रभावित होता है। यह एक सामाजिक चुनौती है। अतः ऐसे उपायों को अपनाना आवश्यक है ताकि जराकाल में व्यक्ति एक स्वस्थ एवं सुखी जीवन जी सके। कालज एवं अकालज जरा नाम से इसका विशद वर्णन आयुर्वेद शास्त्र में उपलब्ध है एवं वय के प्रत्येक दशक में जरा के कारण क्रमशः बाल्यावस्था, वृद्धि, प्रभा, मेधा, त्वक्, दृष्टि, शुक्र, वीर्य, बुद्धि, कर्मेन्द्रिय हानि का वर्णन किया गया है। यथोचित उपक्रम के द्वारा कालज जरा को टाला जा सकता है, जबकि अकालज जरा का उपचार रसायन चिकित्सा द्वारा किया जा सकता है। प्रस्तुत अध्ययन में अकालज जरा की चिकित्सार्थ भृंगराजादिघृत रसायन के सांख्यिकीय दृष्टि से उत्साहवर्धक परिणाम देखे गए हैं।

