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ORIGINAL RESEARCH ARTICLE

ANTI-AGING EFFECT OF AMALAKI RASAYANA IN HEALTHY ELDERLY SUBJECTS

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Abstract

Background: Aging is the accumulation of changes in a person over time. Ageing in humans refers to a multidimensional process of physical, psychological, and social change. The increasing number of the aged (≥ 60 years) in the present scenario signifies a new outlook for our reflection. Populations worldwide are ageing. In present era, medical science deals exclusively with the problem of ageing and the diseases of the elderly. Ayurveda is basically the science of life and longevity. It presents a good concept of ageing, process of delaying the ageing and its management. Amalaki Rasayana consist of rich of vitamin C, both ascorbic acid and its oxidized product dehydroascorbic acid are biological active, active vitamin C includes promotion of non hem absorption. **Aims and objectives:** To evaluate the effect of amalaki rasayana in healthy elderly person. **Methods and materials:** The clinical study was carried out to evaluate the efficacy of amalaki rasayana in subjects above 60 yr to 75 yrs. These subjects were divided in to two group A and B in 15 each. Person were given placebo capsule 60 days in group A and amalaki rasayana in the dose 10 gm once in a day for 60 days in group B and effect was evaluated on pre-test and post-test design. **Results:** Statistically significant ($p < 0.01$) results were seen in subjective symptoms like physical disability, insomnia, difficulty in breathing, grasping power, loss of appetite, constipation, flabbiness of joint etc. **Conclusion:** The trial drug amalaki rasayana along with milk has shown highly significant result in treating symptoms like insomnia, constipation, digestive weakness and hemoglobin percentage. Hence amalaki rasayana along with milk is very effective in treating ageing ailments.

Key words: Amalaki, Rasayana, Rejuvenation, Anti-aging therapy, Jara, Ageing, Phyllanthus emblica Linn.

Introduction

Health care of elderly and most neglected part in the health care system with advancement in medicine still there is no effective remedy to provide active longevity free from disability and functional dependency. Jara tantra a highly

evolved branch in Ayurveda which deals with ageing and age related problem.¹

Ageing is a natural inevitable, irreversible, always progressive biological process, associated with decline physical and mental functions. Ageing occurs at different levels such

as social, behavioral, physiological, morphological, cellular, and molecular. Many systemic problems and disabilities are common in old age due to structural and functional changes of body. Old age brings many problems with it of these, health is most important as it directly impinges on quality of life in an old person.²

The problem of ageing is a global one in the sense that it is experienced by all the countries. In India it was 32 years in 1947, but has shot up to 64 years in 1994 and may further go up to 75 year by year 2015. In the world absolute figure, the number of elderly is presently 65 millions but is expected to cross 177 million by the year 2025.³

The duration of life span has been prolonged, only the average life span has increased. This results in an ever increasing number of old people in every country. The problem is how to keep old people physically fit and how to make them useful to society. This calls for intensive research into the causes which leads to ageing.

In Ayurvedic classics ‘jara chikitsa’ was developed for the old age and their health related problem. It implies promotion of old age and managing problem of old age by using rasayana therapy.⁴ This therapy has widely emphasized promoting, protecting and extending youthful state and thus curtailing ageing process. It is therapy which gives longevity, enhances memory and intellect, maintains good health and restores youth, complexion, body colour, voice. It also gives strength to the physical and to the sense and cognitive organs.⁵ So, there is responsibility to come forward to take preventive measures and treatment aspects for the old age problem.

Amalaki rasayana with milk is selected for the study because it is explained as rasayana useful in ageing and acts as anabolic.⁶ Hence, the present study is undertaken to evaluate the healthy ageing effects of amalaki rasayana. So this study is also intended to see the effect of

amalaki rasayana as rasayana in treating old age elements and anticipating the healthy ageing.

Aims and objectives

To evaluate the effect of amalaki rasayana in healthy elderly person

Materials and Methods

Trial Drug Details:

For the present study amalaki rasayana was prepared with the classical reference from Ashtanga hrudaya.⁷ The trial drug was taken from Pavaman Pharmaceuticals, Bijapur. Milk was used as sahapana for amalaki rasayana. The milk was taken from Nandini dairy, Bijapur.

Table No. 1: Ingredients of amalaki rasayana

Sl.No	Ingredients	Latin name	Quantity
1.	Amalaki	<i>Phyllanthus emblica</i> Linn.	1 part
2.	Madhu	Honey	1 part
3.	Goghrita	Clarified butter	1 part
4.	Khanda Sharkara	Candy sugar	1 part

Method of preparation of Amalaki Rasayana:

The above mentioned drugs were taken in the mentioned quantity. The raw amalaki was converted to powder form and then it was mixed with powdered candy sugar and ghee and heated on mandagni for few minutes, vigorous stirring was done during the heating process so as to attain a homogenous mixture, then after it was self cooled, honey was added and thoroughly mixed and was then stored in an air tight container.

Study Design and Patient Selection

This was a randomized single blind, placebo controlled trial study with pre and post study design. Patients attending O.P.D. of Dr. B.N.M.E.Trust’s SMS Post- Graduate and

Research centre, Bijapur and medical camps conducted by institute were selected irrespective of sex, religion etc. who had presented the clinical symptoms of ageing were included into the study. An elaborative case taking proforma was specially designed for the purpose of incorporating all aspects of the disease on Ayurvedic parlance. Informed consent was taken from the patient before including them in the trial.

Inclusion Criteria and Exclusion Criteria

Elderly person with classical signs and symptoms of jara avastha, Age group of 60 years to 75 years of either sex were included in the study. Patients are excluded who are suffering from systemic disorder and completely physically disabled.

Grouping

Placebo Control Group (Group A): 15 elderly subjects were registered under this group, one placebo capsule of 250mg was given thrice a day for 60 days, Luke warm water was given as Anupana.

Trial Group (Group B): 15 elderly subjects were registered under this group, before giving rasayana for better result amapachana and koshta shuddhi was advised. Panchakola churna was given in the dose of 3gm b.d. before food with luke warm water till appearance of nirama lakshanas. After the nirama lakshana appeared, then haritakyadi yoga was given for kostha shuddhi (bowel evacuation). 10 grams of amalaki rasayana along with milk was administered in the morning with empty stomach for 60 days.

Duration of treatment: 60 days

Diet: Patients were kept under normal diet.

Follow-up: The patients were followed-up after 15 days.

Laboratory Investigations: Hemoglobin percentage for both the group before and after the treatment was carried.

Assessment Criteria

Subjective Parameter

I) Sarva Kriya Asamarthata – (Physical disability)

1. Toilet using

- a. Grade 1 : Independent without difficulty (0%)
- b. Grade 2 : With mild difficulty in sitting and getting up (25%)
- c. Grade 3 : With moderate difficulty in sitting and getting up (50%)
- d. Grade 4 : With marked difficulty in sitting and getting up (75%)
- e. Grade 5 : Needs support (100%)

2. Bathing

- a. Grade 1 : Independent without difficulty (0%)
- b. Grade 2 : With mild difficulty in bathing (25%)
- c. Grade 3 : With moderate difficulty in bathing (50%)
- d. Grade 4 : With marked difficulty in bathing (75%)
- e. Grade 5 : Needs other help (100%)

3. Dressing

- a. Grade 1 : Independent without difficulty (0%)
- b. Grade 2 : With mild difficulty in dressing (25%)
- c. Grade 3 : With moderate difficulty in dressing (50%)
- d. Grade 4 : With marked difficulty in dressing (75%)
- e. Grade 5 : Needs other help (100%)

4. Grooming

- a. Grade 1 : Independent without difficulty (0%)
- b. Grade 2 : With mild difficulty in grooming (25%)
- c. Grade 3 : With moderate difficulty in grooming (50%)
- d. Grade 4 : With marked difficulty in grooming (75%)
- e. Grade 5 : Needs support (100%)

5. Walking

- a. Grade 1- without difficulty (0%)

- b. Grade 2 : Getting fatigue after covering $\frac{3}{4}$ th of distance to cover earlier (25%)
- c. Grade 3 : Getting fatigue after covering 1/2 of distance to cover earlier (50%)
- d. Grade 4 : Getting fatigue after covering $\frac{1}{4}$ th of distance to cover earlier (75%)
- e. Grade 5 : Needs help (others) & cannot even walk $\frac{1}{4}$ th distance to cover earlier (100%)

6. Stairs

- a. Grade 1 : Without difficulty in climbing (0%)
- b. Grade 2 : Experiencing mild difficulty climbing 30 steps (25%)
- c. Grade 3 : Experiencing moderate difficulty in climbing 30 steps (50%)
- d. Grade 4 : Experiencing marked difficulty in climbing 30 steps (75%)
- e. Grade 5 : Needs support in climbing (100%)

I) Nidranasha (Insomnia)

1. Disturbance during sleep (D¹)

- a. Grade 1 : No disturbance
- b. Grade 2 : 1-2 time disturbance
- c. Grade 3 : 3-4 time disturbance
- d. Grade 4 : 6 time disturbance
- e. Grade 5 : >7time disturbance

2. Difficulty in initiating sleep (D²)

- a. Grade 1 : No Difficulty
- b. Grade 2 : $\frac{1}{2}$ -2 hours Difficulty
- c. Grade 3 : 2-3 hours Difficulty
- d. Grade 4 : 3-4 hours Difficulty
- e. Grade 5 : >4 hours Difficult

3. Sleep time /Duration of sleep (D³)

- a. Grade 1 : Total sleep hours (8 hr.)
- b. Grade 2 : 4-6 hours sleep
- c. Grade 3 : 2-3 hours sleep
- d. Grade 4 : 1-1hr 59 min. sleep
- e. Grade 5 : 59 minutes sleep

D) Shwasa Vriddhi (Exertional Dyspnea)

- a. Grade 1: Dyspnea on unaccustomed exertion
- b. Grade 2 : Dyspnea on accustomed exertional work

- c. Grade 3 : Dyspnea on routine activities like moving about in the house etc.
- d. Grade 4 : Dyspnea on rest

E) Malabaddhata (Constipation)

- a. Grade 1: No constipation
- b. Grade 2 : Regular bowel movement consistency hard excessive straining and prolonged defecation time
- c. Grade 3 : 3-5 bowel movement per week, consistency hard.
- d. Grade 4 : 2- 3 bowel movement per week, consistency hard.
- e. Grade 5 : bowel movement once per week, consistency hard.

F) Shlatha Sandhi (loosening of joints)

Leg mobility was assessed by asking the patient to perform a simple test. The patient sitting on a chair was asked to get up and walk 20 feet distance and then return to the chair and sit down.

Normal L.M.T. ≤ 15 second, Abnormal - > 15 second.

G) Grahana Kshaya (grasping power)

Person is asked to with hold the cuff of sphygmomanometer in folding manner for maximum time at maximum mercury level.

- a. Grade 1 : Can with hold more than 2 min.
- b. Grade 2 : Can with hold for 91 sec.-120 second.
- c. Grade 3 : Can with hold in between 61sec.-90 second
- d. Grade 4 : Can with hold in between 30-60 second
- e. Grade 5 : Can with hold less than 30 second.

H) Agnimandya (loss of appetite)

- a. Grade 1 : good appetite
- b. Grade 2 : partial loss of appetite
- c. Grade 3 : complete loss of appetite (loss of interest)
- d. Grade 4 : aversion towards food.

Objective Parameter

I. Weight

- Grade 1 : 3 kg and above
- Grade 2 : 2-3 kg.
- Grade 3 : 1-2 kg.
- Grade 4 : 0-1 kg.
- Grade 5 : 0 kg.

II. Hemoglobin

- Grade 1 : 14 gm % and above
- Grade 2 : 12-14 gm %
- Grade 3 : 10-12 gm %
- Grade 4 : 8 10 gm %
- Grade 5 : Less than 8 gm %.

Statistical analysis

The obtained data was analyzed statistically and presented as mean \pm SEM. The data generated during the study was subjected to student's "paired't' Test" for paired data to assess the statistical significance before and after treatment.

Observation and Results

The observation for present study were done in two stage –

- Generalized observations for each group.
- Specific observations for Group A and B.

General Observations

In the present study it was observed that 21 patients (70%) were of 60-65 yrs. Maximum

subjects observed were of upper middle class i.e. 16 subjects (53.33%). Maximum subjects observed had habit of untimely consumption of food i.e. 15 (50%), timely consumption 13 subjects (43.33%), frequent eating of food 2 subjects (6.66%). It was found that 28 (93.33%) subjects used to consume excessively tea and coffee, 14(46.66%) subjects were having the habit of tobacco chewing and 4 (13.33%) subjects had habit of consuming alcohol. It was found that 12(40%) subjects was having shabdendriya heenata (hearing deficiency/loss), 29 (96.66%) subjects having rupendriya heenata, vision deficiency/loss 2 (6.66%) subjects having rasanedriya heenata (loss of taste perception). 12(40%) subjects were having vishamagni, 10 (33.33%) subjects having mandagni, 7 (23.33%) subjects having teekshanagni and 1(3.33%) subjects having samagni. 15(50%) subjects were having krura koshta, 8 (26.66%) subjects having madhyama koshta and 7 (23.33%) subjects having mrudu koshta. 13(43.33%) subjects were having vata- pitta prakriti, 7(23.33%) subjects having vata - kapha prakriti, 6(20%) subjects having kapha-vata prakriti, 1(3.33%) subjects having pitta - vata, 1(3.33%) subjects having pitta - vata prakriti and 1 (3.33%) subjects having pitta- kapha prakriti

Table no.2: Effect of therapy on Subjective Parameters of Physical disability

Variable	Group	Grading	Mean	SD	SED	t	p value	Significance
Toilet Using	Group A	BT	2.53	0.99	0.067	1.000	0.3343	NS
		AT	2.60	0.99				
	Group B	BT	2.80	0.77	0.133	4.00	0.0013	HS
		AT	2.27	0.88				
Bathing Difficulty	Group A	BT	2.53	0.99	0.067	1.000	0.3343	NS
		AT	2.60	0.99				
	Group B	BT	2.53	0.83	0.067	1.000	0.3343	NS
		AT	2.47	0.83				
Dressing Difficulty	Group A	BT	1.20	0.41	0.067	1.000	0.3343	NS
		AT	1.27	0.46				
	Group B	BT	2.13	1.19	0.091	1.4676	0.1643	NS
		AT	2.00	1.20				
Grooming	Group	BT	1.87	0.74	0.067	1.000	0.3343	NS

Difficulty	A	AT	1.93	0.88				
	Group B	BT	2.27	1.28	0.118	2.0917	0.0552	NS
AT		1.93	1.10					
Walking Difficulty	Group A	BT	2.67	0.82	0.118	0.5641	0.5816	NS
		AT	2.73	0.80				
	Group B	BT	2.80	1.01	0.126	2.6458	0.0192	S
		AT	2.47	1.13				
Step Stairs Difficulty	Group A	BT	2.93	1.33	0.067	1.000	0.3343	NS
		AT	3.00	1.31				
	Group B	BT	3.27	0.88	0.133	3.5000	0.0035	HS
		AT	2.80	0.86				

Table no.3: Effect of therapy on Subjective Parameters of Insomnia

Variable	Group	Grading	Mean	SD	SED	t	p value	Significance
Disturbance in Duration of Sleep (D¹)	Group A	BT	2.47	0.64	0.067	1.000	0.3343	NS
		AT	2.53	0.64				
	Group B	BT	2.87	1.25	0.192	4.5163	0.0005	HS
		AT	2.00	0.76				
Difficulty in Initiating Sleep (D²)	Group A	BT	2.20	0.56	0.118	0.5641	0.5816	NS
		AT	2.27	0.46				
	Group B	BT	2.27	0.46	0.133	4.0000	0.0013	HS
		AT	1.73	0.46				
Duration of Sleep (D³)	Group A	BT	2.07	0.26	0.067	1.000	0.3343	NS
		AT	2.13	0.35				
	Group B	BT	2.07	0.26	0.126	2.6458	0.0192	HS
		AT	1.73	0.46				

Table no.4: Effect of therapy on Subjective Parameters

Exertional Dyspnea	Group A	BT	1.53	0.83	0.067	1.000	0.3343	NS
		AT	1.60	0.91				
	Group B	BT	1.27	0.46	0.091	1.4676	0.1643	NS
		AT	1.13	0.5				
Constipation	Group A	BT	2.93	0.96	0.067	1.000	0.3343	NS
		AT	2.87	0.99				
	Group B	BT	3.27	0.70	0.091	12.47406	0.0001	HS
		AT	2.13	0.64				
Grasping power	Group A	BT	2.20	0.56	0.067	1.000	0.3343	NS
		AT	2.27	0.70				
	Group B	BT	2.07	0.70	0.118	2.2563	0.0406	S
		AT	1.80	0.52				
Loss of appetite	Group A	BT	2.53	0.52	0.98	0	1.000	NS
		AT	2.53	0.51				
	Group B	BT	3.13	0.52	0.118	9.0252	0.0001	HS
		AT	2.07	0.46				
Looseness of joints	Group A	BT	15.667	1.029	0.77	1.7398	0.1038	NS
		AT	15.800	1.026				

	Group B	BT	15.600	1.417	0.083	3.2278	0.0061	S
		AT	15.333	1.371				

Table No.5: Effect of therapy on Objective Parameters

Variable	Group	Grading	Mean	SD	SED	t	p value	Significance
Weight	Group A	BT	53.587	3.781	0.040	1.3307	0.0859	NS
		AT	53.533	3.688				
	Group B	BT	51.533	5.125	0.236	4.6421	0.0004	HS
		AT	52.627	4.630				
Hemoglobin (Hb %)	Group A	BT	11.520	1.041	0.026	0.7638	0.4577	NS
		AT	11.540	1.057				
	Group B	BT	11.760	1.127	0.193	5.3171	0.0001	HS
		AT	12.787	0.657				

Discussion

The problem of ageing is a global one in the sense that it is experienced by all the countries. The demography of India shows that, the present number of senior citizens (elderly person) is 65 million but is expected to cross 177 million by the year 2025.⁸ It indicates that with increased health care facility and standards of living, the death rate of young people has decreased and at same time it has a large number of people in period of old age. This results in an ever increasing number of old people in every country. As age advance the incidence of chronic and degenerative disease increases, the incidence of morbidity is higher. Health care services are thus necessity for the aged being the most valuable group.

The goal of research on ageing is not to increase human longevity regardless of consequence, but to increase active longevity free from disability and functional dependence i.e. longer life with lesser diseases and healthy ageing. In Ayurvedic classics 'jara chikitsa' was developed as a specialization, the practice and health care facilities for elderly from this branch was supreme in ancient past. In classics it is very evident that rasayana therapy is even indicated in treating the natural ageing and even some of

rasayanas like swabhava vyadhi pratishedhaniya rasayana explained by Sushruta⁹ and droni praveshika by Charaka¹⁰ has the capacity to reverse the entire ageing effects. But in the present days the achievements of this branch of medicine is unsatisfactory. From above notion this study was undertaken to observe the healthy ageing effects of rasayana in elderly, in terms to provide active longevity free from disability and functional dependence.

The drug amalaki rasayana is used as traditional medicine since time immemorial for their unique properties like antioxidant, anti-ageing etc.¹¹ Ayurvedic classics have also given priority to these drugs, so these medicines have been taken for the present study. As the study is intended to see the effect of amalaki rasayana in elderly person a placebo controlled clinical study was undertaken. Group A was considered as control group and placebo capsule of green and white colour were given filled with roasted wheat flour. In the entire study it was observed that the consumption of capsule was easier, when compared to amalaki rasayana. Group B was considered as test group and the patients were treated with amapachana, koshta suddhi and amalaki rasayana along with ksheera.

Amapachana is must before carrying out any shodhana karma for the purpose of proper digestion and absorption of test drugs. Hence the amapachana was done with the help of panchakola choorna. The yoga consists of drugs which are having agnideepana, amapachana, krimighna, hridya, swarya etc. Hence the formulation was selected. It was given in dose of 3gm. twice a day with sufficient water and nirama lakshanas were observed within 3 days.

Koshta shuddhi was done before administering the rasayana yoga, without the koshta shuddhi the therapy may not show good results. But Charaka and Vagbhata has contraindicated classical vama or virechana in aged subjects because if administered that may lead to pranoparodha (fatal), balakshaya (decreases strength) and death even.¹² But as Chakrapani mentioned that the other shodhana measures as unnecessary requirements and he specially recommended a recipe named haritakyadi yoga which should be given for the purification of system at the pre-procedural stage before taking any rasayana yoga. Hence the haritakyadi yoga was selected for the purpose of koshta shuddhi.

It was observed that in the dose of 15 to 35 gm. All the 15 patients had avara shuddhi. Out of 15 patients 7 patients (46.66%) having the kura koshta had no koshta shuddhi with dose 15-20 gm but had 3 to 4 vegas with dose of 30-35 gm. Other 8 patients (53.33%) having mrudu and madhyama koshta had avara shuddhi.

Amalaki rasayana contains the Amalaki (*Phyllanthus emblica* Linn.), sugar, ghee and honey. Amalaki has been mentioned as the best rasayana drug and vaya sthapana in Ayurvedic classics.¹³ Also amalaki is known by the name as 'dhatri.' It contains vitamin-C, so it acts as antioxidant. It is not having any other side effect too, easy to prepare, there is very less harmful action. Amalaki is having highly medicinal value and economically cheaper than other drugs.

Ghee has a unique place among Ayurvedic drug formulations. Many special properties have been

ascribed to it. Ghee is having madhura rasa, snigdha, sheeta, guru, mrudu property, having madhura vipaka and acts as medhya and rasayana by its prabhava.¹⁴ In classics it has been mentioned that ghee is rasayana, chakshushya (good for eyes), agnivaradaka (appetizer), twaka varnakara (complexion enhancer), buddhi vardakya (intellect promoter), balya (energy promoter), promotes longevity and protects body from various disease.¹⁵ Ghee has digestibility co-efficient of rate of absorption is 96% which is highest of all oil and fats. Since active ingredients are mixed with ghee they are easily digested and absorbed, lipophilic action of ghee facilitates transportation to a target oxygen and final delivery inside the cell, because cell membrane also contains lipids. The lipophilic nature of ghee facilitates entry of the formulation into the cell and its delivery to the mitochondria, microsomes and nuclear membrane.¹⁶ Usually the active properties of the drug is absorbed by Ghrita which gives maximum benefits and easy to administer. Sugar is having madhura rasa, snigdha, guru guna, sheeta veerya, madhura vipaka and it is having rasayana effect. It acts as vatapittahara, increases digestive capacity, promotes intellect, anabolic, promotes immunity etc.¹⁸

Conclusion

The jara vyadhi has been extensively explained in Ayurvedic classics, which can be correlated with geriatrics and rasayana therapy acts as one of the useful remedy in promotion of the early ageing and prevention of ill effects of ageing. The trial drug amalaki rasayana along with milk has shown highly significant result in treating symptoms like insomnia, constipation, digestive weakness and hemoglobin percentage. Hence amalaki rasayana along with milk is very effective in treating ageing ailments.

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