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Standardization Of Bhrami Ghrita Using Special Refrence To Its Pharmaceutical Study

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ABSTRACT

Water hyssop and "Brahmi" are two words used for Bacopa monneri in the traditional system of medicine. Traditionally, it was used as a brain tonic to enhance learning & memory, and to provide relief in anxiety or epileptic disorders. The plant has also been used as a cardiac tonic, digestive aid and to improve respiratory function in cases of bronchoconstriction. Brahmi contains bacoside A & B, Brahmin as main alkaloid and others are nicotine, herpestine. Bacoside A, B are the major constituents present in Brahmi plant in the form of saponins other than this D- mannitol, hersaponin and potassium salts are also present. In this review we discuss primarily on pharmacological properties, chemical constituents and scientific researches supporting the not only traditional use of Ayurvedic claims regarding Brahmi plant but also other physiological conditions such as antiinflammatory, cardio tonic and other pharmacological effects.

I. INTRODUCTION

Brahmi is derived from word "Brahma" the mythical creator of Hindu pantheon and brain is the centre of creative activity in human body, those compounds that improve brain health is called Brahmi.

The first clear reference of Brahmi regarding augmentation of memory is found in Charak Samhita, where Brahmi is prescribed as a cure for mental disorder (retardation) leading to insanity. The etiology of the mental disorder according to Charak is a combination of anxiety, weak intellect and lack of concentration.

Another authentic Ayurveda treatisei.eSusruta Samhita has described Brahmi as efficacious in loss of intellect and memory.

It is classified as a "MedhyaRasayan" drugs used to improve memory and intellect (Medhya), has been used by Ayurvedic medical practitioners in India for almost 3000 years.

Plants have been used in different formulations which are used in various disorders in traditional system of medicine and researchers supports that some natural compound present in it act as Nootropic activity

Description of plant bhrami

Bhrami (Bacopa monneri), a member of the Scrophulariaceae family, is a small, creeping herb with numerous branches, small oblong leaves, and light purple flowers.

In India and the tropics, it grows naturally in wet soil, shallow water, and marshes. It is also found in Nepal, Srilanka, China, Taiwan, Vietnam, Florida and Southern states of USA.

It is widely distributed in warmer parts of Asia, Australia, America and India commonly known as Brahmi or Indian water hyssop has been investigated.

The herb can be found at elevations from sea level to altitudes of 4,400 feet, and is easily cultivated if adequate water is available.

Flowers and fruit appear in summer and the entire plant is used for medicinal purpose.

Ethnopharmacology of Bhrami:

It is astringent, bitter, having cooling properties and is reported to improve the intellect.

It is widely used for the treatment of asthma, hoarseness, dermatitis, anaemia, diabetes, cardiac disorders, insanity, and epilepsy.

It is also used in boils as blood purifier, used in cataract complaints.

Whole plant is used for medicinal purpose like juice of the leaves for relief in bronchitis and diarrhoea given to children, paste of the leaves is used as a remedy for rheumatism, leaves and tender stalks are reported to be eaten in the west Bengal anddecoction of leaves is used in cough disorders.

It is also observed that it is safe cardiac tonic, gives relief to patients from anxiety neurosis if given with ginger juice, sugar and bark extracts of Moringa oleifera. It was reported as a potent antioxidant and bronco-vasodilator.

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Phytochemistry of Bhrami

In view of the importance of this plant in the indigenous system of medicine, systematic chemical examinations of the plant have been carried out by several groups of researchers.

Detailed investigations were first documented in 1931, when Bose and Bose reported the isolation of the alkaloid "Brahmin" from Bacopa monneri (BM) and other alkaloids like nicotine and herpestine have also been reported later.

It was found highly toxic, when administered at a dose of 0.5 mg/kg body weight of cat, it produces a fall in the blood pressure.

In therapeutic doses it action resembles with action of strychnine chemical. The isolation of D-mannitol, saponins, hersaponin and potassium salts by Sastri provided further details of the chemical components of BM.

The major chemical entity shown to be responsible for the memory-facilitating action of BM, Bacoside A, was assigned as 3-((alpha)-L-arabinopyranosyl)-O-(beta)- D-glucopyranoside-10, 20-dihydroxy-16- keto-dammar-24-ene . It usually occurs with Bacoside B, the latter differ to each other only in optical . Bacosides A and B possess haemolytic activity

Pharmacological properties of bhrami

1.Anti Asthmatic Activity:

BM extract possessed relaxant properties in tracheal muscle of rabbit and guinea-pigs with a partial contribution by (beta)-adrenoreceptor and prostaglandins

It also produced bronco dilation in anaesthetized rats supported the traditional use of this plant in for various respiratory ailments. Bronchodilator property of extract may be reflected by antagonism of carbachol-induced effects on inspiratory and expiratory pressures.

Extract exhibited a dual action on bronchoconstriction induced by carbachol. At low doses (25 and 37 mg/kg), predominantly inhibited inspiratory pressure, but at a high dose (50 mg/kg) inhibited only expiratory pressure.

2.Anti cancer activity:

Pre treatment with BM significantly reduced the acute stress (AS)- induced increase in the ulcer index, adrenal gland weight, plasma glucose, aspartate aminotransferase (AST), and creatine kinase (CK) in cancerous patients.

This was due to presence of Bacosides present in BM, which have anticancer activity. Methanolic extract exhibited potent mast cell stabilizer activity.

Bacopa monneri is a known hyper accumulator of cadmium, chromium, lead & mercury and used for phytoremedy.

3.Antidepressant:

Methanolic extract of BM possess potential antidepressant activity in rodent.

When given in the dose of 20 and 40 mg/kg, orally for 5 days, the extract was found to have significant antidepressant activity in forced swim and learned helplessness models of depression and was comparable to that of imipramine.

4.Anticonvulsive:

Bacopa has been indicated as a remedy for epilepsy in Ayurvedic medicine and animal research showed anticonvulsant activity present in it, only at high doses over extended periods of time.

It have been also reported that crude water extract of BM controls epilepsy in experimental animals. The naturally it exhibited sedative effect and significantly prolonged hypnotic action of phenobarbitone.

Those substances which stimulate GABA are known to possess anticonvulsant, pain relieving and sedative effects. It suggests the involvement of GABA-ergic system in mediation of central nervous system.

5.Anti inflammatory:

Bacopa monneri has the ability to inhibit inflammation through modulation of pro-inflammatory mediator release i.e. it possesses significant antiinflammatory activity that may well be relevant to its effectiveness in the healing of various inflammatory conditions in traditional medicine.

It also significantly inhibited 5-lipoxygenase (5-LOX), 15-LOX and cyclooxygenase-2 (COX-2) activities.

This activity may be due to presence of the triterpenoids and bacosides in it.

6..Anti Spasmodic Activity:

BM extract have spasmolytic activity in smooth muscles due to inhibition of calcium influx via both voltage and receptor-operated calcium channels of the cell membrane.

However, the absence of any modification of either nor-adrenaline or caffeineinduced contractions in the presence of BM extract suggests

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that this natural compound has no detectable effect on mobilization of intracellular calcium

HEALTH BENEFITS OF GOAT GHEE USED IN BHRAMI GHRITA

The goat ghee is made from butter without salt which is made a process called 'clarification' which consists of cooking the butter for many hours removing the 'impurities' and the result is pure fat (having discarded water, protein, hydrates, casein, and lactose).

Although it is saturated fat, it is a fat that helps maintain healthy cholesterol levels if consumed in moderation (moderation is normal to use for cooking or spreading on bread toast in the morning, without overdoing it.
Goat ghee is one of the safest fats for cooking because it resists much better than other oils at high temperatures.

Ghee has been used in Indian medicine (called Ayurveda) for centuries as it is known to help transport nutrients at the cellular level, facilitate digestive processes and nourish tissues and skin. It is also used in the treatment of ulcers, malnutrition, constipation and skin problems.

DISCRIPTION OF PLANTS USED IN BHRAMI GHRITA

1. AMLA

Amla (Phyllanthus emblicaL.) is a small to medium sized deciduous tree belonging to the family Phyllanthaceae.

It grows as wild or cultivated throughout tropical India. It is one of the most commonly used and important herbs in Ayurvedic medicine.

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Fruits of Amla are considered as best among rejuvenating and anti-aging drugs.
Fruit of amla is an important source of Vitamin C.

Other important chemical constituents present are tannins, Phyllemblin, Linolic acid, Indole acetic acid, Ellagic acid, Phyllemblic acid etc.

2.BIBHITAKI:

Bibhtaki is large deciduous tree found throughtIndia reaches height upto 30 meters.
Trunks of the tree is straight with brownish grey color leaves,alternate,oval and are clustered towards the end of branches.These are 7-14 cm in breadth and 10-12cm in length simple and solitary flowers are white or yellow in color with offensive odor.

Baheda flowers appear in month of may. Upper part of plant is male and lower part is female. Baheda fruits are grey colored drupes, ovoid in shape.

3.Nagkesar:

Nagkesar is an evergreen ornamental tree that is found in most of the Asian countries.

Various parts of Nagkesar are used either alone or in combination with other medicinal herbs for their health benefits.

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Nagkesar is beneficial in relieving cold and cough as it removes excess mucus from the lungs.
This also gives relief from certain symptoms of asthma.
Taking Nagkesar powder along with honey or lukewarm water once or twice a day helps reduce fever by lowering the body temperature due to its antipyretic property. It also helps manage bleeding piles, dysentery and stomach irritation due to its astringent property.

4.Harida:

Harad is an herb which is commonly known as Harade in India. It has multiple Ayurvedic health benefits.

Harad is an amazing herb that can be helpful in controlling hair loss and promoting hair growth. This is due to the presence of vitamin C, iron, manganese, selenium, and copper that provides optimal nourishment to the scalp.

In Ayurveda textbooks, properties of Harad are mentioned in this sloka: Harad has Ruksha (dry), Deepan (appetizer), Medhya (intelligence improving), and Rasayana (rejuvenating) properties.

The use of Harad is beneficial for eyes and general weakness due to its Chakshuya (good for eyes) and Brahan (improves health) nature.
It also helps to reduce body ache due to the VataAnuloma (Vata balancing) property.

Harad is also useful in reducing cough and its associated problems like breathlessness.

It also helps in relieving digestive problems due to its Deepan (appetizer) and Pachan (digestive).

Steps for prepration of bhramighrita
1. Murchhana of Ghrita
2. Preparation of Brahmi Swarasa
3. Preparation of Kalka Dravya
4. Preparation of Brahmi Ghrita

1.Murchhana of Ghrita:

The purpose of Murchhna is remove its Daurgandh, Ama Dosh from the crude form of go Ghrita. Murchhana of Ghrita was done with Amalaki (Emblica officinalis), Vibhitaki (Terminalia bellirica), Haritaki (Terminalia chebula), Haridra (Curcuma longa), Musta (Cyperus rotundus) and MatulungaSwarasa.

Amalaki, Vibhitaki, Haritaki, Haridra, Musta are dried in sunlight till the material become moisture less form then this material was made in to fine powder form. After that, fine powder of above mentioned drugs were put in to kharal (Mortar) and appropriate quantity of Matulungaswarasa (Fresh juice) of Matulung was added.

In order to start the process, the Ghrita is taken in to container and heated with mild temperature, then kalka and water were incorporated. Then the total mixture of material was processed over mild heat. During the heating process material is stirred continuously in order to avoid sticking of kalka to bottom of container and also avoid burning of kalka. Each day three hours heating process was done like this process was completed in three days. This murchhitaghrita was used in preparation of Brahmi Ghrita.

2.Preparation of Brahmi Swarasa:

First of all whole parts of fresh Brahmi plant were collected and washed with fresh water to

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remove clay and larger foreign material intact with plant material.

Then with the help of sharp cutting instrument Brahmi plant material were cut in to small pieces. After cutting in to small pieces of Brahmi plant material, these small pieces of Brahmi were put in to End runner, plant material were crushed and made into kalka (paste).

This Kalka was taken into new cotton cloth and compressed, to obtain the Brahmi Swarasa.

3.Preparation of Kalka:

Dravya Brahmi, Vacha, Kushtha and Shankhapushpi were dried in sunlight. When all plant material was dried, then fine powder of Brahmi, Vacha, Kushtha and Shankhapushpi is prepared separately with the help of mortar and pestle.

After that, all ingredients were mixed with each other in khalva yantra and triturated with Brahmi Swarasa. In this way Kalka (Paste) was prepared.

4.Preparation of Brahmi Ghrita:

Brahmi Ghrita was prepared with MurchhitaGhrita.

First of allMurchhitaGhrita was heated on mild heat, when Ghrita was slightly warm then Brahmi Swarasa was added into it and mixed thoroughly, during mixing of Swarasa heating process was continued.

Then Kalka dravya was added. After adding the kalkadravya continuous stirring of whole material was done.

In first day whole material was heated up to boiling for one hour, after that heating process was stopped on first day

In second day heating process was started again and heated for five hours after that, heating process was again stopped.

In third day heating process again started and continued up to obtaining Sneha siddhi lakashana like varti-vat Sneha kalka (wick-like shape), sabdhinoagninikshipto (does not produce crackling sound on fire) etc.

When Sneha siddhi lakashana was obtained, then Ghrita was filtered with the help of cotton cloth.

In this way three samples of Brahmi Ghritawas prepared.

Observations

Initially 2.400 kg of goat ghee was taken for Murchhana process. After Murchhana process 2.250 kg of murchhitaGhrita was obtained. This 2.250 kg of MurchhitaGhrita was used for preparation of Brahmi Ghrita.

Brahmi Ghrita, was prepared in to three batches, so that 2.250 kg of MurchhitaGhrita was divided in to three equal parts.0.750 kg of murchhitaGhrita was used for each batch of Brahmi Ghrita and 0.420 Kg, 0.520 Kg and 0.44 kg of Brahmi Ghrita was obtained respectively.

Total duration of heating process required for preparation of Brahmi ghrita was 9.5, 10, 9.5 hours respectively.

Total quantity of raw materials used in Brahmi Ghrita was 3 liters of Brahmi swarasa, 0.750 kg of MurchhitaGhrita and 120 mg of kalkadravya of Brahmi, Vacha, Kushtha and Shankhapushpi.

Total quantity 1.385 kg of Brahmi Ghrita was obtained in all three batches

Table 1: Showing drugs used in Murchhana of Ghrita

	Ghrita	Amla	Haritaki	Nagkesar	Haridra	Matlung Swarsa	WATER	
Quantity	2.40	100 gm	100 GM	100 gm	100 gm	100 gm	----	
Quantity after drying/Squeezing	-------	90 gm (drying)	83 GM (drying)	78 gm (drying)	87 gm (drying)	60 ml swarsa (squeezong)	----	
Quantity of powder	--	85 GM	80 gm	70 gm	80 gm	---------	----	
Quantity use	2.400 Kg	38 GM	38 gm	38 gm	38 gm	38 gm	9.12 liter	

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Table 2: Showing drugs used in Preparation of Brahmi Ghrita

	ghrita	Bhrami	vacha	kushta	shankpushpi
quantity	2.25 kg	25 kg	100 gm	100 gm	100 gm
Quantity after squeezing and drying	----------	Swarsa 9 liter	89 gm	91 gm	86 gm
Quantity of powder	----------	----------	82 gm	82 gm	78 gm
Quantity used	0.050	3 liters Swarsa	24 gm	24 gm	24 gm

Table 3: Showing details about pharmaceutical process of Brahmi Ghrita

parameter	Sample a	Sample b	Sample c
Total weight of raw material	3 liter9swarsa) +0.0870(ghrita +kalka)	3 liter(swarsa) +0.870 gm(ghrita +kalka)	3 liter(swarsa) +0.870 gm(ghrita + kalka)

Table 4: Showing Break up of temperature given for three samples in three day

days	Sample a	Sample b	Sample c
1st day	1.2 hrs	1.2 hrs	1.2 hrs
2nd day	3.6 hrs	3.6 hrs	3.6 hrs
3rd day	4.7 hrs	4.7 hrs	4.7 hrs

II. CONCLUSION

In present research the formula of Brahmi Ghrita selected from the reference of Charaka Samhita.

By following this formula three samples of Brahmi Ghrita were prepared.

The quantity of Ghee and others raw materials were taken equally in all three samples (Sample-A, Sample-B, Sample-C) but the final yield of the Brahmi Ghrita was more in Sample-B.

The total duration of the Temperature given to the container is more i.e. 10 hrs in Sample-B resulting in to low quantity of kalka with comparing to other two samples.

The temperature observed within the kalka during the stage of Siddhi lakshana among all the three samples the Sample-B contains slight enhancement of Temperature i.e. 94 C.

Since all the observations of three samples (A, B, C) during the manufacturing process of Brahmi ghrita contains without much significant variation.

Hence the average values of three samples are to be considered as a Pharmaceutical Standard Parameters of Brahmi Ghrita.

This is also supported by further investigation conducted for three samples (A, B, C) in experimental models for nootropic activity (Efficacy study), toxicity study and analytical study by showing equally results in all the three samples

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