

Triphala Described as an Antidiabetic Agent in Ayurveda Treatises: A Review

Chandra Shekhar, K. R. C. Reddy, Komal Bansal

Department of Rasashastra and Bhaishajya Kalpana, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, India

Abstract

Triphala is a well-known traditional ayurvedic formulation which is most commonly used to tone up and support the normal functioning of the bowel. Many traditional compounds containing Triphala as an ingredient, is found to be useful in the treatment of several kinds of ailments and diabetes is among one of them. Triphala has been described elaborately in Ayurveda for the treatment of Prameha (diabetes). In this present paper, an attempt has been made to summarize the antidiabetic potential of Triphala as a whole as well as the impact of individual drugs of Triphala. In present paper antidiabetic potential of this formulation is complied. In, Charaka Samhita 7 (30.4%), Sushruta Samhita 4 (17.4%) Astanga Samgraha 2 (8.7%), Vrinda Madhav 4 (17.4%), Gada Nigraha 4 (17.4%), and Chakradatta 2 (8.7%) formulations are described which possess Triphala as ingredient for antidiabetic action. Triphala has been used widely in different dosage forms. 1 formulation in the form of Swaras/rasa (4.3%), 4 as Churna (17.4%), 13 as Kwath/Kashaya (57.0%), 2 as Gutika/Guggulu (8.7%), 1 as Kshaar (4.3%), and 2 in the form of Avasa and Arishta (8.4%).

Key words: Antidiabetic agent, Ayurveda, Prameha, Pramehahar, Triphala

INTRODUCTION

Nowadays, Prameha is recognized as annoyance lifestyle disorder in the society. Although Prameha is considered as a single disease entity, in real sense it provides space for flourishing of many notorious and incurable diseases with due course of time. Various complications related to the kidney damage (nephropathy), cardiovascular diseases, nerve damage (neuropathy), eye damage (retinopathy), foot damage, hearing impairments, skin worse conditions, etc.,^[1] in a person suffering from diabetes for a longer duration. Long-term usage of many contemporary therapies for diabetes including insulin injections, various oral antidiabetic agents such as sulfonylureas, biguanides, and glinides are also some other factors which are responsible for generating a number of serious ill effects on the vital organs of a diabetic person. Hence, it is the need of hour to develop some safer, effective and therapeutically more potent alternative hypoglycemic agents which are competent enough to treat the symptoms and complications associated with diabetes mellitus.

Usage of traditional medicines (TM) is now being accepted worldwide for its

therapeutic benefits for many diseases and also for diabetes mellitus.^[2] In TM even a single herb or formulation contains many phytochemical constituents such as alkaloids, terpenoids, and flavonoids which alone or in conjunction with one another synergistically exhibits desired pharmacological action.^[3] There are no known drug interactions with the three herbal ingredients of Triphala. Hence, administration of any other antidiabetic drugs with Triphala is safer as compared to other formulations, which do not possess it.^[4] Intake of Triphala is considered to be gentle to human body, so it can be administered to the people of all age groups.^[5] In this present paper, an attempt has been made to summarize the extraneous outstanding potential of three fruits (dry fruits of Haritaki, Vibhitaki, and Amalaki which is collectively called Triphala) in cursing disease of today's time, i.e., Prameha which is explained elaborately in numerous ayurvedic treatises [Table 1].

Address for correspondence:

Prof. K. R. C. Reddy, Department of Rasashastra and Bhaishajya Kalpana, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi - 221 005, Uttar Pradesh, India.
E-mail: drkrcreddybh@yahoo.co.in

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Table 1: General description and pharmacodynamic properties of Haritaki, Bibhitaki, and Amalaki^[13]

Description	Haritaki	Bibhitaki	Amalaki
Latin name	<i>Terminalia chebula</i> Linn.	<i>Terminalia bellerica</i> Roxb.	<i>Embllica officinalis</i> Gartn.
Family	Combretaceae	Combretaceae	Euphorbiaceae
Common synonyms	Haritaki, Pathya, Abhaya, Avyatha, Vayastha, Shiva	Aksha, Kaliphala, Bhutavasa, Kalidruma, Karnaphala	Amalaki, Dhatri, Vyastha
English name	Chebolic Myrobalan	Belleric Myrobalan	<i>Embllic myrobalan</i>
Parts used	Fruits	Fruits	Fruits
Rasa	Pancharasa (Lavana Rahita), Kashaya Pradhan	Pancharasa (Lavana Rahita), Kashaya Pradhan	Pancharasa (Lavana Rahita), Amla Pradhan
Guna	Laghu, Ruksha	Laghu, Ruksha	Laghu, Ruksha, Sita
Virya	Ushna	Ushna	Sita
Vipaka	Madhura	Madhura	Madhura
Prabhava	Tridosha hara	Tridosha hara	Tridosha hara
Dosha karma	Visheshatah Kapha pitta Samaka	Visheshatah Kapha hara	Visheshatah Pitta hara
Chemical composition	Tannin, chebolic acid, gallic acid, Coliragin	Tannin, B-sitosterol, gallic acid, tannic acid, ellagic acid	Gallic acid, tannic acid, albumin, Vitamin C

PRAMEHA

Prameha is well described in the ancient literature, i.e. in Vedas and in the Ayurveda. Prameha is a syndrome which includes a group of clinical conditions and mainly characterized by increased quantity of turbid urine, described in classics as “Prabhuta Avila Mutrata.”^[6] Polyuria and Turbidity of the urine are the two essential features of this particular disease.^[7] Some of the ayurvedic scholars have quoted that the word Prameha comprises a list of urinary disorders which may be characterized by abundant urination due to severe imbalances of Dosha and Dushyas.^[8] Two main types of Prameha are described in Ayurveda – Sahaja (refers to natural, inherited or congenital factors) and Doshaja (refers to Dosha vitiation). Based on the clinical importance it is further divided into two types - Sthoola Prameha (urinary disorders of stouts) and Krisha Prameha (urinary disorders of lean).^[9] Diabetes Mellitus is similar to Madhumeha which is one among the Vataja Prameha. In which the patient voids excessive quantity of urine having Madhura Rasa, Ruksha Sparsha, and Kashaya Varna.^[10]

TRIPHALA

Triphala is an important ayurvedic herbal formulation consisting of the dried fruits of three medicinal plants *Terminalia chebula*, *Terminalia bellerica*, and *Embllica officinalis*. Triphala means “three” (tri) “fruits” (phala) and are popularly known in India as Harar, Bahera, and Amla, respectively.^[11] The formulation is prescribed as the first line of treatment of many ailments as a detoxifying agent and rejuvenator. Apart from the formulation, the individual herbs also reported to have dozens of other health benefits such as laxative in chronic constipation, colon cleansing, digestive disturbances, ophthalmic disorders, hypertensive diseases, serum cholesterol reduction, hepatic abnormalities, enteritis,

and ulcerative colitis.^[12] But along with these therapeutic activities, it has a wide range of description for the management of different kinds of Prameha in the ayurvedic literature [Table 2] either individually or in combination with some other formulations.

The most valuable treasures of Ayurveda including Brihatrayee (Charaka Samhita, Sushruta Samhita, and Astanga Samgraha), Rasa Granthas (Vrinda Madhav), Nighantu (Gada Nigraha), and Chakradatta were filtered out for the formulations having Triphala as a whole or in parts and especially indicated for Prameha.

Pramehahar properties of Triphala in Ayurveda

Pramehahar (antidiabetic) formulations having Triphala as the main ingredient are very well defined in Brihatrayee especially in the chapters dealing with the treatment of Prameha. In Charaka Samhita total 7 (30.4%), Sushruta Samhita 4 (17.4%), Astanga Samgraha 2 (8.7%), Vrinda Madhav 4 (17.4%), Gada Nigraha 4 (17.4%), and Chakradatta 2 (8.7%) formulations are there containing Triphala as ingredient for antidiabetic action. Total 13 (57.0%) formulations contains more than 50% of Triphala, while 10 (43.0%) possesses <50% of Triphala as the main ingredients. On screening out the above texts it was found that at four places usage of only Triphala (100%) in the form of kwath (decoction) and churna (powder) has been prescribed for the patient suffering from Prameha [Table 2].

Researches validation about antidiabetic potentials of Triphala

Haritaki is known to possess antidiabetic effect as its aqueous extract on oral administration can improve glucose utilization

Table 2: Triphala containing formulations in ayurvedic texts^[14-23]

Name of formulations	References	Ingredients	Percentage of Triphala	Indications as a antidiabetic agent
Triphaladi Kwath	C.S.Su. 23/10,11	Triphala + 7	30	Santarpanotha Prameha
Triphala Kashaya	C.S.Chi. 6/22	Triphala + 3	50	Santarpanajanya Prameha
Triphala Kwath	C.S.Chi. 6/26	Triphala + 3	50	Prameha Nashak
Phalatrikadi Kwath	C.S.Chi. 6/40	Triphala + 4	42.85	Sarvaprimehahar
Madhvasava	C.S.Chi. 6/41-44	Triphala + 27	10	In Kapha-pittaj Prameha
Triphala Rasa	C.S.Chi. 6/46	Triphala	100	Udakapan in Sarva prameha
Triphaladi Kshaar	C.S.Chi. 15/188-193	Triphala + 27	10	Primehahar
Triphala Churna	S.S.Su. 38/57	Triphala	100	Primehahar
Triphala Kwath	S.S.Chi. 11/8	Triphala + 3	50	Sarvaprimehahar
Triphala Kwath	S.S.Chi. 11/8	Triphala + 2	60	Phenamehahar
Triphala Kwath	S.S.Chi. 11/8	Triphala	100	Kshaarmeha nashaka
Triphala Kashaya	A. S. Su. 12/47	Triphala	100	Primehahar
Muskadi Kashaya	A. S. Su. 16/26	Triphala + 7	30	Primehahar
Phenmeahar Kwath	Vi. Ma. 35/8	Triphala + 2	60	Phen Mehahar
Triphaladi Kwath	Vi. Ma. 35/11-13,19	Triphala + 3	50	Prameha har
Nyogrodhadi Churna	Vi. Ma. 35/24-28	Triphala + 24	11.1	Vinshatimehahar
Trikatvadi Gugglu	Vi. Ma. 35/32-33	Triphala + 8	27.3	Primehahar
Triphaladi Kashaya	G. Ni. 30/46	Triphala + 2	60	Phen Mehahar
Gokshur Gugglu Vatika	G. Ni. 30/61-62	Triphala + 5	37.5	Primehahar
Kushtadhya Churnam	G. Ni. 30/77	Triphala + 7	30	Primehjanya Vedanahar
Shavadanstradhyam Churnam	G. Ni. 30/78-84	Triphala + 29	9.4	Primehahar
Triphaladi Kwath	Chakradutta 35/6-11	Triphala + 2	60	Phen Mehahar
Triphaladi Kutajadishcha	Chakradutta 35/19	Triphala + 3	50	Primehahar

C.S.Su.: Charaka Samhita Sutrasthana, C.S.Chi.: Charaka Samhita Chikitsasthana, S.S.Su.: Sushruta Samhita Sutrasthana, S.S.Chi.: Sushruta Samhita Chikitsasthana, A.S. Su.: Astanga Samgraha Sutrasthana, Vi. Ma.: Vrinda Madhava, G. Ni.: Gada Nigraha

during glucose tolerant test (46.8% reduction in blood glucose at 2 h) within 90 min after administration of the extract and also brings down the fasting blood sugar to near the normal value in 2 weeks from an initial high value of 253 + 9.4 mg/dl.^[24] Diabetic nephropathy is one of the complications associated with diabetes mellitus in chronic stage and Haritaki in its chloroform extract form produces renoprotective effects in STZ induced diabetic rats.^[2] Apart from antidiabetic activities, it is also helpful in curing the diseases associated with imbalance of all the three Doshas, i.e., Vata, Pitta, and Kapha, stimulating digestion and promoting longevity.^[25] Similarly, Amalaki (*E. officinalis*) is known to be effective in the long-term treatment of Prameha and it also could protect the alpha cells of pancreas from oxidative stress and make them to function properly, with the extraneous advantage of modulating the lipid profile.^[26] It is also used for urinary tract dysfunctioning such as painful urination and conditions which tends to be difficulty in micturition.^[27] It has Ushan Virya (i.e., cooling effect) that manages Pitta, further supporting the liver to perform its natural functions and also boost up the immune system. *E. officinalis* extract has been shown to reduce liver injury and prevents from hepatotoxicity.^[28,29] In the line of various medicinal impacts

of Haritaki and Amalaki, Bibhitaki also exhibits antidiabetic effect and most commonly it is used for the removal of excessive phlegm deposited in respiratory tract via acting as bronchodilator, and also removes Kapha deposited in urinary tract such as stones.^[30]

DISCUSSION

Triphala is an esteemed drug in ayurvedic system of medicines which has been prescribed for centuries to cure a wide range of ailments. As it is a polyherbal formulation, thus it exhibits a different mechanism of action from that of synthetic drugs or single substances. And looking out on all the above formulations, it was observed that Triphala has been used widely in different dosage forms such as 1 formulation in the form of Swaras/rasa (4.3%), 4 as Churna (17.4%), 13 as Kwath/Kashaya (57.0%), 2 as Gutika/Guggulu (8.7%), 1 as Kshaar (4.3%), and 2 in the form of Avasa and Arishta (8.4%) [Table 2].

Acharya Charaka has described 20 types of Prameha and treatment planned by categorizing the patients into two

groups, i.e., Sthula Pramehee (stout built person) and Krishna Pramehee (lean built person). In the formulations mentioned above 14 (61.0%) are Sarvapramehahar (effective in all the Twenty types of Prameha), 4 (17.4%) are Phenmehahar, 2 (8.7%) in Santarpanjanya Prameha, and 1 (4.3%) in each Vata Kaphaja Prameha, Kshaar Meha and Pramehajanya Vedana [Table 2]. Hence, it can be said that Triphala consists the potential to treat each and every type of Prameha or acting as an effective antidiabetic agent. Antidiabetic activity of the herbal drugs is mainly due to their ability to restore the functions of pancreatic tissues by causing an increase in insulin output or inhibit the intestinal absorption of glucose or to the facilitation of metabolites in insulin-dependent processes.^[31] As herbal drugs are a complex mixture of different phytoconstituents and these are one of the responsible factors along with pharmacological properties of that drug for a drug to perform its action. Individual drugs of Triphala contain glycosides, alkaloids, terpenoids, flavonoids, carotenoids, etc., and these all are frequently implicated to possess potential as antidiabetic [Table 1].^[32] In different classical treatises, huge therapeutic properties of Triphala have been given and various research works have also been done in this regard to further validate the above consideration. Individual drugs of Triphala, i.e., Haritaki, Bibhitaki, and Amalaki exhibits wide range of medicinal properties especially antidiabetic properties. From the above aspects, it can be said that Triphala is one of the magic remedy in various ailments and specifically in Prameha. Different references are available for Triphala in different treatises. Barley soaked in Triphala Kashaya, kept overnight and then mixed with honey acts as a nourishing diet. Furthermore, Triphala along with Musta (*Cyperus rotundus*), Patha (*Cissampelos pareira*) mixed with honey has also been given. Moreover, it should be taken by the patient suffering from Prameha regularly to overcome the disease.^[33] Triphala as a whole is expected to be more effective due to the combined activity of the individual components. Antioxidant property of Triphala arises from the Polyphenols, which reduces the oxidative stress by converting the reactive oxygen free radicals to non-reactive products.^[34] Triphala are also the drugs said to act as Naimittika Rasayanas which is beneficial in Prameha.^[35] Its potency as an anticancer drug, antibacterial, anti-inflammatory and in treatment of arthritis, stress, and cataract is all well studied and proven. As there is lot of adulteration and substitution in the herbal market more studies and parameters for Quality Control of the individual ingredients and the compound formulation Triphala needs to be established and carried out so as to ensure reliability and reproducibility of the formulation.

CONCLUSION

As usage of herbal medicines is increasing worldwide, hence it can act as a medicinal boon at different stages of diabetes mellitus and also in complicated phases of diabetes mellitus. The study disclosed the avenue properly for evaluating the therapeutic efficacy as well as inbuilt potential of a common

preparation “Triphala” which can on various ailments in a very effectively way but its antidiabetic potential can't be undervalued.

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