CLASSICAL USES OF DADIMA: A REVIEW

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ABSTRACT

Dadima phala has been used as both as Aharaas well as Aushadha. This article reviews the various formulations (Both simple as well as compound) from across the classics of Ayurveda like Charaka Samhita, Sushruta Samhita, Astanga Hrudaya, Bhavaprakasha, Chakradutta, Yogaratnakara, Harita Samhita, Bhaishajya ratnavali etc.

INTRODUCTION

Dadima is a fruit which is taken as a part of food it can be considered a Nutraceutical. There are a lot of medicinal values attributed to different parts of the Dadima. This article reviews the various formulations (Both simple as well as compound) from across the classics of Ayurveda like Charaka Samhita, Sushruta Samhita, Astanga Hrudaya, Bhavaprakasha, Chakradutta, Yogaratnakara, Harita Samhita, Bhaishajya ratnavali etc.

Keywords: Dadima, Nutraceutical, Simple and Compound formulations

ABSTRACT

Dadima phala has been used as both as Aharaas well as Aushadha. The Botanical Name of Dadima is Punica granatum Linn. The concept of Nutraceuticals is gaining a lot of importance in the recent few days. People are exhausted taking medicines which are difficult to take and also have lot of side effects. They prefer to take something which is easily available and also that which can be a part of food to treat their ailments. Nutraceuticals have been defined as a food or a part of food that provides medicinal or health benefit including prevention and treatment of diseases. Dadima is a fruit which is taken as a part of food it can be considered a Nutraceutical. There are a lot of medicinal values attributed to different parts of the Dadima. This article reviews the various formulations (Both simple as well as compound) from across the classics of Ayurveda like Charaka Samhita, Sushruta Samhita, Astanga Hrudaya, Bhavaprakasha, Chakradutta, Yogaratnakara, Harita Samhita, Bhaishajya ratnavali etc.

KEYWORDS: Dadima, Nutraceutical, Simple and Compound formulations

INTRODUCTION

Dadima has been mentioned under Hridya and Chardi nigrahana Vargas of Charaka and Parushakadi gana of Susruta. Among the nighantus it has been mentioned under Amradi varga of Bhavapraksha nighantu and Rajanighantu and Oshadhu varga of Kaiyadeva nighantu. It has synonyms like Karaka, Kuchaphala, Dantabija, Phalashadava etc.

- Botanical Name- Punica granatum Linn.
- Family: Punicaceae
- Habitat-Dadima is a native of Afghanistan, Baluchistan and Persia. Apparently wild in the warm valleys in outer parts of the western Himalayas, hilly tracts of Punjab and Sind, cultivated in Western and Northern Bengal, Bihar, Orissa, Maharashtra and some parts of Gujarat. This species is distributed across S.Europe, N.Africa and S.E.Asia. It grows wild in the sub-Himalayan tracts up to 1500 m altitude; cultivated throughout India for its edible fruits. Flowering and fruiting season. Spring or summer to rainy to autumn season onwards. Wild and cultivated or planted trees may vary for seasons in different regions or occurrence and growth of plants.
- Habit-A large deciduous shrub or small tree, bark smooth, grey, thin; often armed with small axillary or terminal thorns.
- Leaves- opposite, 2.5-6.3 cm long. Oblong-lanceolate, oblong-elliptic or oblong-oblaneolate, glabrous, entire, minutely pellucid-punctate, shining above, bright green beneath, base narrowed into a very short petiole
- Flower- 3.8-5 cm long and much, across mostly solitary, sometimes 2-4 together, terminating short shoots, sometimes apparently axillary sessile or nearly so.
- Calyx- tube campanulate, adnate to and produced beyond the ovary, coriaceous, lobes 5-7, valvate
- Petals- 5-7, obovate, scarlet, wrinkled, inserted between the calyx lobes. Stamens are numerous, inserted between the calyx below the petals at various levels; anthers elliptic, dehiscing longitudinally.
- Ovary- inferior, many-celled, the cells arranged in 2 concentric circles.
- Style-long, bent; stigma capitate.
- Carpels- early coalescing and owing to unequal growth becomes arranged 2 tiers; 3 in lower and 5-9 in the upper
- Fruit- 3.8-7.5 cm in diameter, globose, tipped with the calyx-limb, rind coriaceous, woody, the interior sepalate with the membranous walls of the carpels each carpel containing numerous seeds angular from mutual pressure. Seeds with a watery outer coat, containing pink juice and horny inner coat.

VARIETIES

According to Bhavaprakasha nighantu- 3 varieties
- Swadu
- Swadwamla
- Amla

According to Dhanvantari nighantu
- Madhura,
- Amla

RASA PANCHAKA

| Table 1: Madhura Dadima (sweet variety) |
|-------------------------|----------------------|
| Rasa | Madhura, Kashaya, Amla |
| Vipaka | Madhura |
| Veerya | Anushna |

| Table 2: Amla Dadima (sour variety) |
|------------------------|-----------------|
| Rasa | Amla |
| Vipaka | Amla |
| Veerya | Ushna |
Classical uses of Dadima

Various classics like Charaka Samhita, Susrutra Samhita, Astanga Sangraha, Astanga Hrudaya, Bhavaprakasha, Chakradutta, Yogaratnakara, Vanagasena Samhita, Harita Samhita, Bhaishajya ratnavali etc. were reviewed to collect formulations in which any part of Dadima was used as an ingredient.

Formulations of Dadima in Charaka Samhita.

Raktapitta- Charaka refers about Shatavaryadi Ghrita in which Dadima pushpa is one of the ingredients. This formulation can be used for the treatment of Kasa (Cough), Jwara (Fever), Anaha, Vibandha (Constipation), Shula (Colic pain) and Rakta pitta (bleeding disorders).

Gulma- There is a reference of Hingusauvarchaladaya Ghrita in which Dadima (Beeja) is one of the ingredients. This has been used in the treatment of Shula (Colic pain) and Anaha. When this is taken along with Dadhi(Curds) it treats Vataja Gulma(Abdominal lump caused due to Air humor).

Hapushadi Ghrita- In this formulation Dadima Swarasa has been used as an ingredient. It can be used for the treatment of Yoni roga(Vaginal disorders), Arshas(Haemorrhoids), Pippali 1 karsha(Ghrita used for the treatment of Guda bhramsha(Rectal Prolapse)).

Pippalyadiya Ghrita- Here also Dadima phala in the form of swarasa(Juice) has been mentioned as one of the ingredients. This yoga is helpful in the treatment of Vataja Gulma(Abdominal lump caused due to Air humor), Yoni shula(Pain in the vagina), Shirashula(Headache) and Vishama jwara(Irregular or intermittent fever).

Hingwadi churna or Gutika – Amla Dadima phala is one of the ingredients of this yoga. This is useful in the treatment of Parshwashula(Pain in the flanks)., Hridayashula(Pain in the heart), Bastishula(Pain in Urinary Bladder), Kaphavatataja Gulma(Abdominal lump), Anaha, Mutrakriucha(Dysuria) etc.

Dashamuli Ghrita- Dadima beeja is one of the ingredients which is useful in the treatment of Kaphaja Gulma(Abdominal Lump)4

In the Rajayaksha Chikitsa Adhyaya, while mentioning about the treatment of Atisara(Diarrhoea) during the Rajayaksha Charaka has mentioned about Khada yoga. Among various other kwathas, the Dadima patra kwatha has been used for this formulation7 (Ch.Chi-8/131).

Unmada – Dadima twak is one of the Ingredients of Kalyanaka Ghrita mentioned for the treatment of Unmada(Insanity), Apasmaraspitis(Epilepsy), Agnimandhyapitaya(Indigestion), Visarpa(Herpes), Kandu(Itching) etc.

Amla Dadima phala is the ingredient of Lashunadya Ghrita used for the treatment of Shula(Colic pain), Gulma(Abdominal Lump), Arsha(Haemorrhoids) and all types of Unmada. (Insanity)6

Kshatakshina chikitsa- Amla Dadima is an ingredient of Saindhivadi churna which is helpful as Deepana(Carminative), Bula karaka(Strength promoter) and Parshwapeeda hara(Pain in the flanks).

Arshas chikitsa- For Anulomana of Mala(Easy evacuation of Faeces), Yavani, Nagara and Pata churna are mixed in Amla Dadima Swarasa and taken along with Guda(Jaggery), Lavanasa(Salt) and Dadhi(Curds)3 Pippalyadiya ghrita- Amla Dadima phala swarasa is used, which is helpful to treat Vibandha(Constipation).4

Grahani Chikitsa- Amla Dadima Swarasa is the Bhuana dravya in the preparation of Chitrakadya gutura used for Deepana and Pachana(Proper digestion).

Amla Dadima phala swarasa siddha Yavagu is very much useful in Grahani(Irritable bowel Syndrome)6.

Pandu chikitsa- Dadimadya ghrita- it is the chief ingredient of this formulation. It is helpful in Pandu (Anemia), Gulma (Abdominal tumor), Arshas (Haemorrhoids), Plehcha(Splenic disorders) and Vatakaphaja vikaras3.

Kasa Chikitsa- Dadima phala is the ingredient of Kantakari Ghrita explained in the context of Kasa chikitsa.(Treatment of Cough)10

Atisara Chikitsa- Dadima phala is the ingredient of Chavyadi Ghrita used for the treatment of Guda bhramsha(Rectal Prolapse)4.

In the treatment of Pittatisara(Diarrhoea caused due to Pitta dominance) there is a mention of a preparation of Utpala, Dhakta pushpa, Dadima twak and Shunti which has to be taken along with Madhu and Tandulodaka.

Trishna chikitsa- lepa prepared out of Dadima, Vidari and Bjeeaparuka is beneficial.

Use of Dadima in Susruta Samhita12

In the treatment of Karnashula(Earache), the oil cooked with the juice of Matulunga, Dadima, tintidika and gomutra is said to be useful.

Hingu, Trikatu, Vaca, Ajamoda, Dhunyaka, Ajagandha, Dadima, Chitraka, Yavakshara, Saindhava, Bida, Pippali mula – the powders of these are impregnated in matulunga swarasa and pills are prepared with this. This is useful in the treatment of Kasa(Cough), Shwasas(Bronchial Asthma), Gulma(Abdominal Lump), Udara, Arochakta(Anorexia), Hridroga(Heart Disease), Adhmans(Distention of abdomen with Gas), Parshwashula(Pain in the flanks), Basti shula(Pain in the urinary bladder), Udara shula(Pain in the stomach), Anaha, Mutrakriicha(Dysuria), Plecha roga(Splenic disorders), Arshas(Haemorrhoids).

The decoction prepared out of Priyangu, Sariva, Padmaka, Manjistha, Ambastha, Dadima twak, Shalaparni, Nagakeshara, Dhakta, Bakula, Shalalmi, Sriteshtaka and Mocharasa is cooked with gur and this is administered to the patient suffering from prameha(Diabetes).

Dwandaja jwara pathya prayoga(Irregular fever)- For this the yusha(Medicated soup) prepared out of Dadima, Alamaki and nudga is said to be very useful.

In the treatment of pakwatisara(Diarrhoea), there is mention of 4 stambha yogas- Here one yoga consists of Shalalmi veshtaka, Rodhra and Dadima twak. This can either be taken in the churna(powder) or Kwattha(Decoction) form and given. The anupana can either be Madhum(Honey) or Tandulodaka(Rice water).

Kapitchhadi prayoga in Atisara(Diarrhoea)- Kapitta phala, Shalalmi, Vata, Karpasa and Dadimadall these are given along with Dadhi(Curds)for the treatment of Atisara.

Formulations of Dadima in Ashtanga Hrudaya

Dadimadi yoga- Amla Dadima twak 2 pala, Purana guda 8 pala Trikatu 3 pala – the formulation made out of all the above is useful in the treatment of Shwasas(Asthma) and Kasa(Cough) (a.h.chi.3/51)

Gudadi yoga - Guda 8 tola, Yava kshara ½ karsha, Maricha 1 karsha, Pippali 1 karsha, Dadima phala 1 pala – the churnas of all these mixed together and administered is helpful in the treatment of Kasa(Cough) and Shwasas(Asthma)15

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Saindhavadi yoga – Amla Dadima phala is one of the ingredients of this yoga which is Ruchikaraka (Taste Promoter), Agnidipakappat (Appetizer), Balavardhaka (Strengthen promoter), Parshwasha (Pain in the flanks), nashaka, Shwasal (Asthma) and Kasaharar(13) 

Yavanishadava churna – Amla Dadima phala is ingredient of this yoga which is useful in the treatment of Malabandha ( Constipation), Kasa (Cough), Hridroga (Heart disorders), Parshwasha(Pain in the flanks), Arshas (Haemorrhoids) and Granthis (Irritable Bowel Syndrome). 

The powder of Amla Dadima phala, Maricha, Shunti and Hingu fried in ghee are all mixed together and administered in case of Apanantara(Convulsions), Hridroga (Heart disorders) and Shwasa roga (Asthma). 15

Takra prayoga in arshas – Amla Dadima swaraas along with Jeeraka, Yavani, Guda Nagara and Pata churna are processed with Takra (Butter milk). This is useful in Anulomana of apana vayu and mala, (Easy evacuation of Gas and Faeces). 16

Dadika ghruta – Dadima phala swarasa is one of the ingredients of this yoga which is useful in the treatment of Apasmara (Epilepsy), Unmadha (Insanity), Maturagruha (Urinary Disorders) and Vataja rogas (Nervous disorders) 17

Dashnuni ghrita – Dadima swarasa is one of the ingredients of this yoga which is useful in the treatment of all types of Gulma roga (Abdominal Lump) 17.

Shatpala ghrita – Dadima swarasa is one of the ingredients of this yoga which is helpful in the treatment of raja yakshma (Tuberculosis) and Gulma 17.

Formulations of Dadima in Bhavaprakasha Sanhit 18

In Pittaja jwara chikitsa(Fever due to Pitta), gargling the mouth with water mixed with the paste of seeds of ripe Dadima and Dhanyak is said to be beneficial.

Fine powders of Amla Dadima phala - 2 pala, Khanda sharkara - 3 pala and Trijataka - 3 palas are made into formulation called Dadimadi churna. This churna taken in the dose of 1 to 3 g is useful in the treatment of Arochaka, Amlapitta, Ear infection, and Kasa (Cough). 18

Dadima phala twak is the ingredient of Dadima phala swarasa which is useful in the treatment of Madhukadi churna which is useful in the treatment of Pittaja Atisara (Diarrhoea).

Dadima puta paka - Administration of the juice extracted from Dadima phala kalka through putapaka vihidi mixed along with honey is useful in the treatment of all types of atisara.

Kutajadadima kashaya - the kashaya prepared out kutaja, Dadima phala twak is useful in the treatment of atisara and rakritisara.

Dadimashatam-Dadima bejea 8 pala along with Vamshalochara, Chatumathaka, Yavani, Dhanyak, Aajai, Pippali mula and Vyosha(Trikatu) is called as Dadimashatam. This is useful in the treatment of Atisara, Granthis, Kshaya, Gulma, Gala roga (Throat disorders), Kasa, Shwasa, Aruchi and Hikka(Hicups).

Dadima is one of the ingredients of Patadya churna which is helpful in the treatment of Chardhi(Vomiting), Jwara, Atisara, Shula, Trishna, Daha (Burning sensation), Granthis, Arochaka and Aghnima.

Dadima is the ingredient of Kapitashtaka churna which is useful in the treatment of Atisara, Granthis, Kshaya, Gulma, Gala roga, kasa, Shwasa, Aghnimandya, Arshas, Pinasa and Arochaka.

Dadima is the ingredient of Mahagandhara churna which is useful in the treatment of Asta vidha jwara (8 types of Jwara), Atisara, Granthis.

Dadima dala is one of the ingredients of Madhya gangadhara churna which is useful in the treatment of Atisara, Granthis, Trishna, Durjara kasa (Chronic Cough), different types of Jwara, Pandu and Aruchi.

Dadimais the ingredient of Jeerakadiva churna which is useful in the treatment of Granthis, Anitisa, Kamala(Jaundice), Pandu and Mandagni

Dadimacchada churna is one of the ingredient of piyushvallini rasa which is useful in the treatment of Atisara, Teevra jwara, Severe Rakritisara, Chronic Granthis roga, Sothi(Inflammation), Arochaka, Chardhi, Gulabramsha, Udara, Arochaka (Dysfunctional uterine bleeding), Kamela etc.

Dadima patra swarasa is one of the bhavana dravya of Jatipalida vatika useful in the treatment of Kasa, Amlapitaa (Acidity), All types of Shota (Inflammation).

Formulations of Dadima in Chakradutta and Bhaishajya Ratnavali 19

Dadima patra is one of the ingredients of Brihat panchamuladi kwatha referred for the treatment of Jwaratisara, Atisara, Rakritisara.

Dadima is the ingredient of Kanchatadi kwatha which is useful in the treatment of Atisara.

Dadima is one of the ingredients of Brihat Lavangadi churna which is useful for the treatment of Granthis, Pakwatisara, Vedanayukta Atisara(Severe Diarrhoea).

Dadima is the ingredient of Punna Kala vati which is useful in the treatment of Granthis, Shula, Daha, Jwara and Bhrama.

Dadima is the kalka dravya of the formulation Kantakari ghrita which is used in the treatment of Shwasa, Kasa, Jwara, Arochaka and Shula in children.

Dadimacchada churna is one of the ingredients of this formulation which is useful for the purpose of Abhyanga (Oil Massage) in all types of diseases of the children. This promotes Kanti (Lustre), Medha, Dhruti (Intelligence) and Pushit (Strength).

Dadima is one of the kalka dravya of the formulation Brihat chagaladaya Ghrita which is useful in Nasa shukra, Shukra nissarana (Disorders of Semen) and Vataja Asrigdhara.

Dadima is one of the main ingredients of Dadimadya taila referred for the treatment of asadhya granthis, 20 types of Prameha and all the 6 types of Arochakas.

Dadima is one of the bhavana dravya of Dadima waphalas, one of the ingredients of this formulation. This was advised by Ashwini kumaras for the treatment of raktapitta. With tandudodaka as anupana, it is useful in the treatment of all four types of Prameha, severe Raktatisara and Raktarshas.

In the formulation called Gangmajnana ghrita is one of the ingredient of Garbha shula. (Pain in the Uterus) which can helpful during dentition period, sarvagraha dosha (Irritable Bowel Syndrome).

Dadima is the ingredient of Guduchiyadi kwatha which is useful for hastening suppuration and also checks the aggravation of vayu in the pathology of matrika.

In pradara roga chikitsadikara of Bhaisajyaratnavali there is reference of Chandnadi churna. Dadima phala is one of the ingredients of this formulation. This was advised by Ashwini kumaras for the treatment of raktapitta. With tandudodaka as anupana, it is useful in the treatment of all four types of Pradaara, severe Raktatisara and Raktarshas.

In the formulation called Karmakalanaka ghrita has been mentioned in which Dadimais said to be an ingredient which can helpful during dentition period, sarvagraha dosha and krimidanta.
It is the ingredient of Mehamadgara vatika which is useful in the treatment of Prameha, Mutrutrika, Mandagni, Dhatutaga jwara, Pandu, Raktapitta and Vatakaphaja rogas. Dadima beja is the ingredient of shukamatautuka vati which has been mentioned for the treatment of 20 types of Premeha, all types of Mutrutrika and Ashamari.

In the prameha rogadikara formulations called prameha kulatanka rasa, Dadimadya ghrita, bhrat Dadimadya ghrita and mahat Dadimadya ghrita have been mentioned in which Dadima phala is said to be the main ingredient.

Formulations of Dadima in Yoga ratnakara

In the treatment of Vatatisara, peya prepared out of Kapitha, Bilwa, Changeri and Dadima is useful which is said to Grahi and Pachani. In the treatment of Pittatisara, churna of Yashthimadhu, Katphala, Lodhra and Dadima phala twak is taken along with Tandumadaka and Madhu. Dadima is the ingredient of Kantakari ghrita which is useful in the treatment of all pranavaha sroto vikaras.(Respiratory disorders)

In the treatment of Aruchi sharkaradi yoga is useful. This consists of sharkara, Dadima, Draksha and Karhajra in equal quantities.

Ardraka Dadima yoga- Ardraka along with Saindhava, Dadima and Madhu is useful in Jhwa and kanta shuddhi(For cleansing the tongue and throat).

In the treatment of tridosha chardi, yoga prepared out of massura saktu, Madhu and Dadima swarasa is said to be useful.

Dadimadi lepa- Dadima, badara, lodhra, kapitha and beequapuraka all are taken and made into a paste. This applied to the head which is helpful to treat daha and pippasa.

In the treatment of Panatayya(Disorders caused due to excessive alcohol intake), Kharjuradi mantha is said to be helpful which has Karhajra, Mrudvika, Vriksamla, Chinchna, Dadima, Parushaka and Amalaki as ingredient.

In Daha chikitsa adhyaya, a formulation called Dashasara churna has been explained, the ingredients of this are Yashthimadhu, Amalaki, Draksha, Ela, Chandana, Balaka, Madhukapushpa, Karhajra and Dadima. This is said to be useful in treating all kinds of pittaja vikaras.

In the treatment of Vatatisara, peya prepared out of Kapitha, Bilwa, Changeri and Dadima is useful which is said to Grahi and Pachani. In the treatment of Pittatisara, the paste made of Utpala, Dadima twak, Keshara, Kamala, Yashthimadhu and Amalaki in Tandumadaka is taken along with Madhu.

In the treatment of Pittatisara, a formulation called Shaliparnyadi yoga is said to be useful. The ingredients of this are Shaliparni, Prishniparni, Bala and Bilwa. All this are processed in Dadimada swarasa to make kanji(Gruel).

Dadimadi kwata- Dadima, Kapitha, Haritaki, Jambu and Amra pallava all this are processed in Dadhi mustu and this when taken treats Rakatsitara.

Dadima phalatwak churna is an ingredient of Amruta vataka which is useful in the treatment of Atisara, Shula, Murcha(Fainting), Bhrama, Anaha and Kamala.

In the treatment of Kaphaja grahani, the kwhata prepared of Kantakari, Pippalimula, Chavya, Tulasi, Dadima, Haridra, Musta and Chitraka is said to be useful. The Varti(Suppository) made of paste of Triphala, Trikatu, Karanja beja, Dadima and Matulunga swarasa, Haridra when kept the eyes is helpful to treat Visuchika.(gulma chikitsa)

In the treatment of Pittaja shula, Amalkari churna, Loha churna, Haritaki, Shunti, Maricha,Pippali all are taken in equal parts and are soaked in either Dadima swarasa or Matulunga swaras. This when taken helps relieve Pittaja shula(shula nidana)

Harataladi nasya- when there is raktu pravritti(Bleeding) from the Ears and Nose haratala mixed in Dadima swarasa is said to be useful.

DISCUSSION

Nutraceuticals can be defined as “a food or a part of food that provides medicinal or health benefit including prevention and treatment of disease. Fruits have also been considered to be Nutraceuticals as they help in treatment of many diseases along with their nutritive values. Pomegranate has been considered a potent Nutraceutical as it contains various Phytoconstituents which help in the treatment of various diseases. Also it is a very commonly available fruit which is easy to get and cost effective.

In the above review it can be seen that various parts of Dadima like Patra(Leaves), Pushpa(Flowers), Phala(Fruit) and Phala twak(Fruit rind) have been used both for the external and internal applications.

Also Dadima has been evidently used both as a part of food as well medicine in the treatment of various disorders like Jwara, Atisara, Trishna, Gulma, Arshas, Aruchi proving it to be an effective Nutraceutical from an Ayurvedic perspective.

CONCLUSION

The concept of Nutraceutical is to use the available food materials as products to treat our ailments. The food materials can be either vegetables or fruits which we use in our daily life. Dadima phala or pomegranate is one of the most commonly used fruit on the day to day basis. It has a lot of nutritional and medicinal properties which make a potent fruit to be used.

Based on the points of the above review it can be seen that Dadima has been used both as part of food as well as medicines in various formulations across various classics of the Ayurveda proving it to be a potent Nutraceutical.

REFERENCES

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