ROLE OF ARJUNA-KSHIRAPAKA IN PREVENTION AND MANAGEMENT OF ATHEROSCLEROSIS

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ABSTRACT

Kshirapaka is one of the most useful kalpana has been mentioned in our Ayurveda text. By this formulation we may increase efficacy and potency of drugs and minimize unwanted effects. By this formulation we may find both water and fat soluble constituents present in drugs in the milk. In Ayurvedic texts, it has been mentioned that Arjuna is having Laghu, Ruksha Guna, Kashaya Rasa, Katu Vipaka, Virya Shita and Prabhav Hridya. By the virtue of above qualities Arjuna is Kaphapittashamaka. Due to Laghu, Ruksha Guna and Kashaya Rasa it pacifies the Kapha and due to Shita Virya it pacifies the Pitta. Due to the property of Kashaya Rasa it acts as Raktastambhana, Sandhaniya and Vranaropana. It better nourishes to the heart and makes powerful to the muscles of the heart by which contraction and relaxation of the heart makes perfectly. Due to the presence of B-Sitostirol, Elegic acid, Arjunic acid and Glucoside Arjunetin, Fridelin it works as Cardiotonic. Kaphakariita of milk decreases along with rukshata of Arjuna by this method. Due to Kashaya and Ruksha property it is used in medoroga (obesity) by its own Lekhana Karma (Property).

Key words: Ayurveda, Kshirapaka, Kwatha, Prabhava, Atherosclerosis.

INTRODUCTION

Kshirapaka is one of the unique preparations of Ayurvedic pharmaceutics. Here milk is used as a media for the formulation. Because milk is an emulsion, having capacity to dissolve mainly water soluble, protein soluble and fat soluble ingredients to some extent from the drugs used for Kshirapaka preparation. Besides to this, milk is also having antacid property due to its alkalinity. Because of more dietic value of milk it is used as a dietic regimen and as well as medicine. Because of its palatability, it can be used easily for treatment purposes. Because of alkalinity of milk and its antidote activity Kshirapaka can be used in wide range. Usually Kashaya rasa dravyas are used for the preparation of Kshirapaka. Reason is that because of the irritability of the Kashaya rasa acceptance of these drugs in direct form is comparatively less. Hence ancient Ayurvedic scholars have made a step to make the palatable form of Kashaya rasa dravya by the name of Ksirapaka. Moreover synergetic action of both milk and medical drugs also achieved by means of this formulation. The Arjuna was introduced into
Ayurveda as a treatment for heart disease by Vagbhata (c. 7th century CE). It is traditionally prepared as a milk decoction. In the Ashtanga Hridayam, Vagbhata mentions Arjuna in the treatment of wounds, hemorrhages and ulcers, applied topically as a powder. Rukshata of Arjuna and Kaphakaritva of milk reduce by Kshirapaka. Terminalia arjuna contains ingredients that help stimulate the heart. It might also help the heart by lowering cholesterol and blood pressure.

LITERATURE REVIEW

Arjuna Kshirapaka is made by following Kwatha like preparation. As this drug is having Laghu, Ruksha Guna and Kashaya Rasa. That will be reduced by doing Kshirapaka and by doing this active principles of the drug will get dissolved in milk. For making the milk laghupaki, Shunti Kshirapaka are also mentioned. Usually for making Kshirapaka, drugs which are having amla and lavana rasa not supposed to be taken, because amlarasa and lavanarasa will spoil the milk. Drug is mixed after making it into coarse powder from. Always Kshirapaka has to be prepared in mandagni so that sensitive active principles may not get spoiled with severe temperature. It can be administered by mixing appropriate of sugar. Medicated milk has been recommended in jirnajavara. Milk should be taken eight times of the drugs. To this, water should be added in four times the quantity of milk. After boiling only the quantity of milk should remain. This is the procedures for preparing the medicated milk. When medicinal drugs are made paka with Kshirapaka medicine may not release active principles completely in to the milk. Hence by using medicinal drug, kwatha is proposed. Equal quantity of this kwatha and Kshira are taken, and then heated with mandagni till milk alone is left. Here Vagbhata’s technique regarding Kshirapaka is seems to be more reliable for separation of more active principles from the drug and introducing them in to milk. In chronic fever when kapha is attenuated, milk works like rector while the same taken in acute one kills the patient like poison. Arjunadisiddha Kshira is used in Hridroga. One part of drug is boiled in 8 part of milk with the addition of 32 parts of water. The boiling is continued till the water is get evaporated and milk alone is left. It is used for treatment of Shula and ama. According to Acharya Yadav Ji Trikam Ji medicinal drug one part, milk fifteen part, water fifteen part. All are mixed and made paka till total quantity is reduced upto the quantity equal to milk then filtered and collected liquid is called Kshirapaka. Milk processed with Arjuna bark or panchamula (laghu) or bala or madhuka and added with sugar should be given in heart disease. Those who use powder of Arjuna bark with ghee, milk or jaggery water overcome heart-disease, chronic fever and innate haemorrhage and attain longevity. If, bark powder of Arjuna mixed with powdered wheat is cooked in milk and given, all types of Hridayoga are cured. Milk cooked with the bark of arjuna should be given to drink adding sugar or panchmula (in small quantity) or bala or madhuka. Property of kshira are 10 in number similar to property of Ojas.

ARJUNA

Botanical Name-Terminalia arjuna Roxb., Family- Combretaceae. The Arjuna is about 20–25 metres tall; usually has a buttressed trunk, and forms a wide canopy at the crown, from which branches drop downwards. It has oblong, conical leaves which are green on the top and brown be-
low; smooth, grey bark; it has pale yellow flowers which appear between March and June; its glabrous, 2.5 to 5 cm fibrous woody fruit, divided into five wings, appears between September and November. The *Arjuna* is usually found growing on river banks or near dry river beds in West Bengal and south and centra India. *Arjuna* is regarded as an important cardio tonic herb.

**BARK** – B-sitostiol, elagic acid, triterpenoids arjunic acid, arjunolic acid, arjugenin, a glucoside arjunetin & fridelin, arjunasides A-E, arjunetoside, Tannin – 20-25%, Flavonoids, Saponin, ajunglycosides IV & V, Arjunaphthanoloside, Terminarjunoside I and II, Terminoside A, Terminolitin, pelargonidin, an anthocyanin, minerals such as Calcium – 0.33%, Magnesium – 0.078%, Aluminium – 0.076%, crystalline compounds such as arjunine, arjunetin, essential oils and reducing sugars. **FRUITS** – Tannin – 7-20%, Arjunglycoside I-III and Arjunetin, Hydrolyzable tannin structures (Ellagic acid, Gallic acid, Corilagin, Chebulagic acid, etc.), Chebuloside II and Bellericoside, Dietary minerals of Calcium, Magnesium, Zinc, and Copper. *Arjuna* is having Kashaya Rasa, Laghu, Raksha Guna, Shita Virya, Katu Vipaka, Hridya Prabhava and Kaphapittasamaka Dosakarma.  

**THERAPEUTIC USES:**

*Terminilia Arjuna* or *Arjuna* contains prostaglandin enhancing and coronary threat modulating properties, promotes effective cardiac performance by regulating blood pressure and cholesterol levels properly, in cases of liver cirrhosis, possesses diuretic and a general tonic outcome, reduces the effects of stress and nervousness on the heart, relieves hypertension or High blood pressure, supports normal heart function, heart muscle energy, platelet function, and blood pressure levels and acts as a natural tune-up for the heart, numerous therapeutic cardiac benefits, provides a significant cardiac protection in heart attack, helps in lowering cholesterol levels and maintaining it to normal levels, beneficial for all heart related problems, used as wound healer also, Due to its excellent curing power it can be applied locally on burned area, helps in clot formations so it has been used in wounds and injuries to prevent blood loss, works as a wonderful antioxidant so it helps in stopping early aging signs and helps in maintaining youth, also improves functioning of cardiac muscle, is very effective in tubercular cough by stopping blood in cough and healing the ruptured arteries in lungs, maintains normal urine flow and helps in suppressing painful micturation. Angina, Antioxidant, Breast cancer, Cholesterol, DNA protection, Heart disease, Ulcer, Anti-inflammatory properties, Controls cholesterol, Cardiac protection, Keeps diabetes in check, Liver protection, Reduces gastric ulcers, Treats asthma, Diarrhoea and dysentery, Fractures and contusions, casuarinin, a hydrolysable tannin isolated from the bark, exhibits antiherpes virus activity by inhibiting viral attachment and penetration.  

**RESEARCH UPDATE**

- Casuarinin from the bark of *Terminalia arjuna* Induces Apoptosis and Cell Cycle Arrest in Human Breast Adenocarcinoma MCF-7 Cells.  
- *Terminalia arjuna* protects rabbit heart against ischemic-reperfusion injury: role of antioxidant enzymes and heat shock protein.  
- *Terminalia arjuna* reverses impaired endothelial function in chronic smokers.
Atherosclerosis (also known as arteriosclerotic vascular disease or ASVD) is a specific form of arteriosclerosis in which an artery wall thickens as a result of the accumulation of calcium and fatty materials such as cholesterol and triglyceride. It reduces the elasticity of the artery walls and therefore allows less blood to travel through. This also increases blood pressure.

PATHOGENESIS OF ATHEROSCLEROSIS

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<th>High caloric &amp; saturated lipid rich diet + sedentary life style</th>
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<td><strong>Rasapradushti</strong></td>
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<td><strong>Samrassa</strong> (Hyperlipidemia) +</td>
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<td><strong>AnginaPectoris/Heartdiseases</strong> kapha-pitta + Rakta + Meda</td>
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<td><strong>Chestpain</strong> Obstruction of arteries + Vata</td>
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<td><strong>Atherosclerosis</strong></td>
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DISCUSSION AND CONCLUSION

Concept of Ksirapaka is seen first time in Charaka Samhita, Jwara Chikitsa, here he described Ksirapaka of trikantaka, bala, etc. similar concept about kshirapaka has been given by other scholar after Charaka like Sushruta, Vagbhatta, Sharangdhara etc. The bark of Terminalia arjuna has been used in India for more than 3000 years, primarily as a heart remedy. An Indian physician named Vagbhata has been credited as the first to use this product for heart conditions in the seventh century A.D. Research on terminalia has been going on since the 1930s, but studies have provided mixed results. Its role, if any, in heart disease still remains uncertain.

The drugs having kashaya, tikta and kutu rasa and tiksna properties are commonly used for Kshirapaka preparation. The main aim of kshirapaka is to reduce the tikshna guna of dravyas by means it becomes more palatable. Apart from this both water soluble and fat soluble active ingredients comes in to this preparation, which makes this formulation more efficacious than other preparation like kwatha. The additional advantage of Ksirapaka is due to the property of milk itself. Property of kshira is 10 in number similar to property of Ojas. By these properties kshira promotes the longevity of life and maintain the dhatus. Arjuna is having Laghu, Ruksa Guna, Kashaya Rasa, Katu Vipaka, Virya Shita and Prabhav Hridya.
through Kashaya, Laghu, Ruksha is Kapha-shamaka and by Shita virya it pacifies pitta, Charaka placed Arjuna in Kashayaskandha, Udardaprashamana mahakasaya, Sushruta in Nyagrodhadi, Salasaradi Gana. So it seems that Arjuna has the property of Kaphaha and Lekhaniya. As we know the root cause of Hridroga is intake of fatty substances. Researches show it has Anticoagulant property. It also helps in Raktastambha, Sandhaniya and Vranaropana due to Kashaya Rasa. Dose of Arjuna kshirapaka is 5 to 10 gm.

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