

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-Sitostinol, Elegic acid, Arjunic acid and Glucoside Arjunetin, Fridelin it works as Cardiotonic. *Kaphakaritva* 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 pharmaceuticals. 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. Be-

cause 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 *Kshirapaka*. 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 *amla rasa* and *lavana rasa* will spoil the milk. Drug is mixed after making it into coarse powder form. 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*¹. 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 tak-

en, and then heated with *mandagni* till milk alone is left². 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 poison³. *Arjunadisiddha Kshira* is used in *Hridroga*⁴. 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*⁵. 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 disease⁶. Those who use powder of *Arjuna* bark with ghee, milk or jaggery water overcome heart-disease, chronic fever and innate haemorrhage and attain longevity⁷. If, bark powder of *Arjuna* mixed with powdered wheat is cooked in milk and given, all types of *Hridroga* are cured⁸. Milk cooked with the bark of *arjuna* should be given to drink adding sugar or *panchmula* (in small quantity) or *bala* or *madhuka*⁹. Property of *kshira* are 10 in number similar to property of *Ojas*¹⁰.

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 November¹¹. The *Arjuna* is usually found growing on river banks or near dry river beds in West Bengal and south and central India. *Arjuna* is regarded as an important cardio tonic herb. *Arjuna* regarded as the sacred trees of India. BARK – B-sitosterol, elegendic acid, triterpenoids arjunic acid, arjunolic acid, arjugenin, a glucoside arjunetin & fridelin, arjunasides A-E, arjunetoside, Tannin – 20-25%, Flavonoids, Saponin, arjunglycosides IV & V, Arjunaphthanololide, Termiarjunoside 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%, Arjunoglucoside 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 Copper¹². *Arjuna* is having *Kashaya Rasa, Laghu, Ruksha Guna, Shita Virya, Katu Vipaka, Hridya Prabhava* and *Kaphapittasamaka Dosakarma*¹³.

THERAPEUTIC USES:

Terminalia 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,

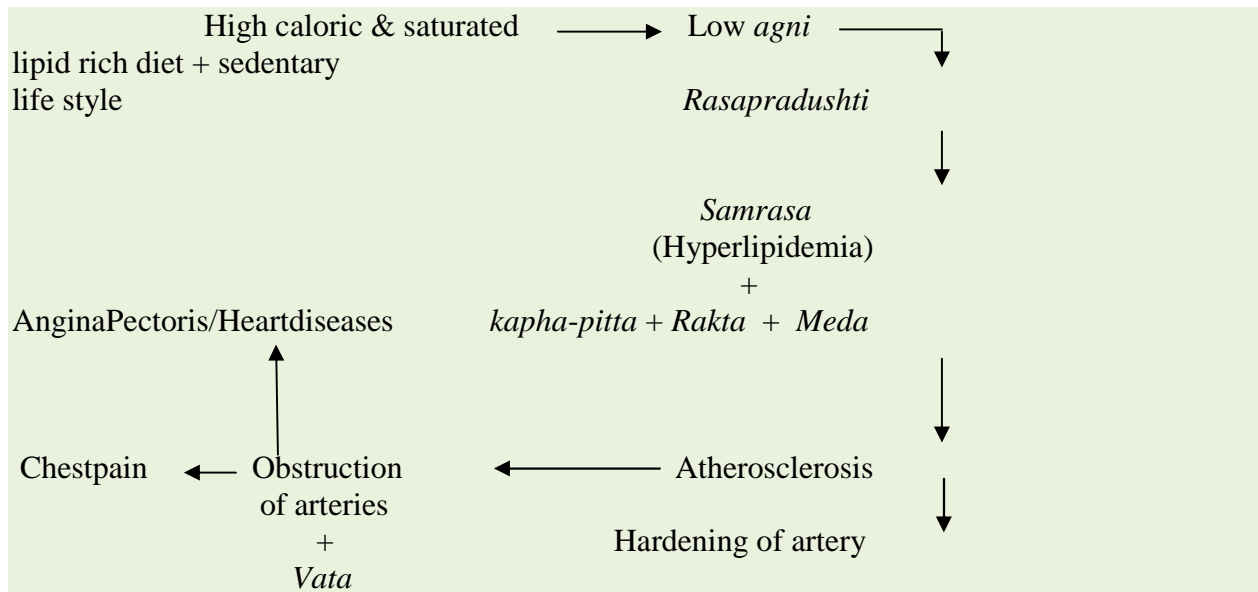
heart muscle energy, platelet function, and blood pressure levels and acts as a natural tune-up for the heart, numerous therapeutic cardiac benefits, provides a significant cardiac protection in heart attack, helps in lowering cholesterol levels and maintaining it to normal levels, beneficial for all 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 micturition. 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 anti-herpes virus activity by inhibiting viral attachment and penetration¹⁴.

RESEARCH UPDATE

- Casuarinin from the bark of *Terminalia arjuna* Induces Apoptosis and Cell Cycle Arrest in Human Breast Adenocarcinoma MCF-7 Cells¹⁵.
- *Terminalia arjuna* protects rabbit heart against ischemic-reperfusion injury: role of antioxidant enzymes and heat shock protein¹⁶.
- *Terminalia arjuna* reverses impaired endothelial function in chronic smokers¹⁷.

- Cardioprotective effect of the alcoholic extract of *Terminalia arjuna* bark in an in vivo model of myocardial ischemic reperfusion injury¹⁸.
- Efficacy of *Terminalia arjuna* in chronic stable angina: a double-blind, placebo-controlled, crossover study comparing *Terminalia arjuna* with isosorbide mononitrate¹⁹.

PATHOGENESIS OF ATHEROSCLEROSIS²⁰



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.

DISCUSSION AND COCLUSION

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, Vagbhata, 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 *kuturasa* 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 *dhatu*s. *Arjuna* is having *Laghu, Ruksha 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 *Kaphahara* 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 *Raktastambhana*, *Sandhaniya* and *Vranaropana* due to *Kashaya Rasa*. Dose of *Arjuna kshirapaka* is 5 to 10 gm.

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