PHARMACOLOGICAL ACTION OF ARJUNA BARK LEPA ON VYANGA

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ABSTRACT

Ayurveda is the most ancient science in which proper treatment of various diseases is described. But it is a requirement to revalidate this knowledge on scientific basis, so that whole world can accept it. Vyanga is a very common skin problem which is described under kshudraroga in Ayurveda classics. Its sign and symptoms resembles with a modern disease melasma. So many formulations in form of lepa are mentioned for treatment of vyanga, among which the most peculiar is Arjuna bark local application mentioned by acharya sharangdhara. Arjuna is the most common herb which is called as herbal hero of heart. But on the basis of chemical constituents it can be understood that on local application how Arjuna bark works on hyper pigmentation. In this way not only we can understood the richness of our ancient knowledge but also can very easily and cheaply treat vyanga very effectively.

KEYWORDS: Ayurveda, vyanga, Arjuna, chemical constituents.
INTRODUCTION
Since 7th cent A.D. Arjuna is used in Ayurveda for treating various diseases. Acharya charak has mentioned Arjuna under udardmahakashya and in various formulations in various diseases. Acaryya sushruta has mentioned Arjuna in salsaradigana in dravyasangrahaniya adhyay. Disease vyanga was firstly described by acharya sushruta in nidasthan chapter 13 named kshudrarogadhikara. According to Ayurveda vyanga is characterized by presence of niruja and shyavvarna mandalas. Vitiated ranjak pitta, raka dhatu as well as udan vata travel in body through dhamnis and get sthan samshraya in mukhgata twacha and causes vitiation of bhrajak pitta giving rise to discoloration of skin. For vyanga various formulations are mentioned in classics and mainly drugs which are mentioned under varnya mahakashya by acharya charaka are used. Ayurveda is very effective in treatment of skin diseases and in bahiparimarjan chikitsa lep chikitsa is very effective. As skin is also a route of administration so it can be easily understood that local application in vyanga will be more helpful. Various lepa are advised for vyanga but the peculiar one is Arjuna twak lepa as Arjuna is a drug which is mainly used for heart disease.

SOURCES AND METHODS
A detail study of drug Arjuna twak is compiled from various Ayurveda texts, scientific Journals and research papers etc.

DRUG REVIEW
As it’s stem is white in color so it is called as Arjuna.

Botanical name:- *Terminalia arjuna* (roxb.) Wt. & Arn.
Family:- *combreaceae*
It is large, deciduous/evergreen, up to 6- 15 (-25) m tall, often having a buttressed trunk, and a broad, oval crown with drooping branches. It is mostly found near water banks.

Classification of Arjuna
• Charaka: Kashayaskandha, Udardaprashamana
• Sushruta: Nyagrodhadi, Salasaradi
• Vagbhatt: Nyagrodhadi, Virtarvadi
• Bhavaprakash Nighantu: Vatadi
• Bhavaprakash: Nyagrodhadi, Salasaradi
• Dhanvantari Nighantu: Amradi, Swati Nakshatra Vriksha
Properties and action of *Arjuna*[^5]

- **Rasa**: Kashaya
- **Guna**: Laghu, Ruksha
- **Veerya**: sheeta
- **Vipaka**: Katu
- **Prabhava**: Hridya
- **Doshaghnata**: Kaphapittashamaka.

Chemical constituents[^6]: Alicyclic and amino acids and polyols (fruit, leaves, bark, wood); tannin 5,7,2',4', tetramethoxy flavone, arjngluside III, hentriacontane, myristyl oleate and arachidic, stearate (fruits); arachidic stearate (fruits); arachidic stearate, cerasidin, hentriacontane, myristyl oleate, mannitol, β- sitosterol, friedelin (bark); methyl oleanolate, ellagic and terminic acid, gallic acids (root); arjunic acid, its saponin, β-sitosterol, arjunetin, β-D- glucopyranosyl- 2α, 3β, 19α- trihydroxy-11-oxoolean-12-en – 28- oate= arjuno side III; 2,3,23- trihydroxy- olean- 12- en28- oic acid; arjunic acid— 28- oate= arjuno side III; 2,3,23- trihydroxy- olean- 12- en28- oic acid; arjunic acid—3-0-β-D-glucopyranosyl→α-L-2-deoxyrhamnopyranoside(arjunoside-II), arjunic acid-3-0-α-L(-)-rhamnoside (arjunoside IV) and hydroxyhexadecanoic acid (root bark); baicalein, 6,4'-dihydroxy-7-methoxyflavone(arjunolone), 2α,3β,19α-trihydroxy-olean-12-en-28-oic acid, arjngulosides I&II(bark); 3 β,13β-dihydroxy-lup-20(29)-en-28-oic acid, leucocynidine(root);(+)-leucodelphinidine (wood).

Aqueous extract of *T. Arjuna* bark was analysed for its composition and molecular weight distribution by dialysis. Compositional analysis revealed that it has 44% polyphenols and dialysis study showed that 70% of polyphenols have molecular weight greater that 3.5kDa. HPTLC confirmed that it contains flavon-3-ols such as (+)- catechin, (+)- gallicatechin and (-)- epigallocatechin.

Phenolic acids such as gallic acid, ellagic acid and its derivatives are also found in *T. Arjuna* extract. Triterpine glucosides are arjunetin, arjunoglucoside 1, arjunoglucoside2, arjunoglucoside3, arjunocide 1 and 2. Polyphenols are arjunin, arjunone and arjunotine.
DISCUSSION

Probable Mode of action of drug

Changes in the skin are the most visible signs of ageing. The appearance of epidermis is affected by hyperpigmentation. The main mechanism of skin cell disturbance is based on oxidative stress reaction. Phenolic compounds possess a broad spectrum of biological activities. Plant phenolic compounds are a promising target for new dermal cosmetics that possess the ability to maintain the skin homogeneity and a proper healthy look due to effective skin cell renewal, elastin and collagen stimulation and inhibition of excessive melanin synthesis.

The main phenolic compound is epigallocatechin which acts on hyperpigmentation. Domingo et al. conducted a study on effect of a cream containing 2.5% w/w of epigallocatechin. It shows an inhibitory effect on angiogenic growth and transcription factors, vascular endothelial growth factor and hypoxia-inducible factor -1. It is an antiangiogenic compound may be potential agent in prevention of hyperpigmentation. Moreover epigallocatechin is very effective in improving the skin condition by reactivation of the damaged or old cells due to DNA protection and production of more energyin the cells. Tests performed on skin cell culture have shown that phenolic compounds are effective in suppression of melanin synthesis. [7]

Tannin, Epigallocatechin, gallic acid, ellagic acid inhibits matrix metalloprotinases

Maintain proper skin structure- collegen protection and restoration, maintainance of the skin cells.

Excessive production of melanin caused predominantly by UV exposure, as well as cosmetic drugs, chemicals and particular disease states, may lead to dermal disorders. The melanin inhibitors are supposed to act mostly by the suppression of tyrosinase and phenolcs have similar structures to tyrosine.

The most effective way of skin treatment is surface and topical application. Plant phenolic compounds are the promising target for new dermal cosmetics that possess the ability to maintain the skin homogeneity and proper healthy look due to effective skin cell renewal, elastin and collagen stimulation and inhibition of excessive melanin synthesis. The most
common properties of polyphenols are- antioxidant, anti-inflammatory and anti microbial which indicate that they deserve recognition in natural medicine and may be highly effective in treatment of various skin problems. These three mentioned properties constitute the main potential mechanisms of action against various skin disorders.

Ayurveda mode of action

On the basis of inherent properties of drug the mode of action can be understood. Rasa of Arjuna is kashaya, laghu and ruksha are guna and it is sheeta in veerya. Arjuna mainly has raktaprasadak and pittashamak property.

Pitta and rakta dosha will be encountered by its kashaya rasa and will remove twak vaivarnyata so as to attain normal skin color. Due to sheeta veerya it will encounter pitta dosha and prasadan property of sheeta veerya helps in purifying accumulated doshas in vyanga. So twak prasadak property of Arjuna will help in removing locally accumulated doshas in vyanga.[8]

CONCLUSION

As healthy skin is most important for healthy mental state of person but in this fast going world it has become very difficult to take care. So for maximum skin problems local applications are the easiest way for treatment. But modern cosmetic treatment is not so cost effective and many have adverse reactions too. Arjuna twak lep is effective in all the parameters as it is cost effective, easily available, and potential in treatment. Arjuna is a versatile drug which is useful in so many diseases and among all the herbs which are used for treatment of vyanga, is most easily available and cost effective drug.

REFERENCES


