

A REVIEW ON SANDHANA KALPANA W.S.R TO SARASWATARISTA

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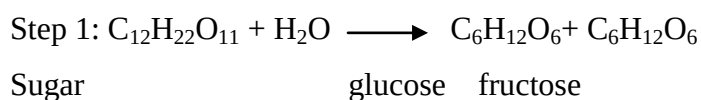
ABSTRACT

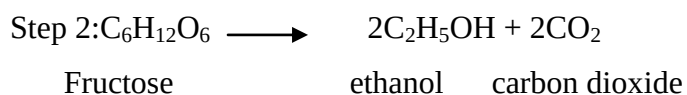
The preparations resulting from the process of fermentation are considered as Sandhana Kalpana. Asava and arista are two major products of this process. These preparations have unique identity because of the self generated alcohol, which acts as preservative. They are known to have infinite shelf life and they get better with time in terms of their potency and sharpness provided if they are stored properly.^[1] Saraswatarishta^[2] is an ayurvedic preparation which comes under asava –arishta, utilized in different health conditions like anti aging, acts as nervine tonic to improve memory and is considered as ‘parama ojakara’ also.

KEYWORDS: asava–arista, sandhana kalpana, saraswatarista.

INTRODUCTION

Ayurveda is considered as oldest healing science, originated in India more than 5000 years ago often called as ‘mother of healing’. Ayurveda emphasis on maintaining health of a healthy person and then curing diseases/ailments. Hence Ayurveda enriched with different formulations, one such is Sandhana kaplana. sandhana kalpana /asava arishta vignana is one of the secondary preparations in the ayurvedic classics. Sandhana means union or combination, here medicines are combined together and allowed to be in the same state for specific time period for fermentation. Fermentation is the incomplete oxidation of sugar into ethanol and carbon dioxide in the absence of oxygen, brought about by the enzymes invertase and zymase secreted by yeast cell.^[3]





These formulations have longer shelf life, quick absorption, action and excellent therapeutic efficacy as compared to other formulations.

A. History

The fermentation technique may be revealed its existence since vedic period till date.

a) Vedic period: literary evidence from vedic period gives the confirmation of the existence of fermentation process.

- Rigveda^[4] – mentioned somarasa(Rigveda -2/14/01) fermentation with barely, used as an offering to god
- Yajurveda – sura- obtained after complete fermentation of properly cooked rice, for human consumption
- Atharva veda- mentioned madya for treatment purpose

b) Kautilya artashastra: Suradhyaya 1,2 and 3 two types of sandhana kalpana are mentioned.^[5]

c) Brihatrayees

- **Charaka samhita**^[6]

sura, sidhu, souvira these fermented preparations are mentioned.

9 asava yoni – Phala, dhanya, pushpa, twak, mula, sara, kanda, patra and sharkara

84 asava drugs along with the properties of asava

- **Sushruta samhita**^[7]

A number of sandhana kalpanas were prescribed for surgical procedures as anesthetic drug and for treating many disease condition

21 fermented drugs as asava arista

46 madya products like madya, sura, prasanna , jagala, surasava etc.

In this samhita mentioned addition of botanical ash as ingredient of asava arista, which are having various therapeutic benefits.

- **Astanga hridaya and sangraha**^[8]

use of dhatakpushpa as a fermentative initiator is documented first time in astanga hridaya.

Draksha, makshika, ikshu, shali, vrihi are 5 sources used to prepare madya and sandhana kalpana.

A total of 17 asava arista in astanga sangraha and 8 in astanha hridaya are quoted.

d)Sharangadhara samhita^[9]

Sandhana kalpana is elaborately explained in this book

Explained various acidic and alcoholic fermentations, which are from barely, rice, sugar cane jice, grape juice

Explained about pharmaceutical and therapeutic efficacy of fermented preparations

e)Bhaishajya ratnavali^[10]

Duration to keep the medicine filled container for 15 to 1 month has been mentioned

50 sandhana kalpanas are explained, out of which 15 asava, 29 arista, 2 chukra, 2sura, 1 shukta, and 1 kanji

f)Ayurvedic Formulary of India^[11]

Parts 1 and 2 of Ayurvedic Formulary of India describes 40 asava arista, with complete detail of their pharmaceutics and therapeutics.

CLASSIFICATIONOF SANDHANA KALPANA

1.Madya kalpana-alcoholic preparations

- Sura-prasanna
Kadambari
Jagala
Medaka
Surabija
- Sidhu
- Varuni
- Asava arista

2. sukta kalpana- acidic preparations

- Sukta
- Tusambu
- Souvira
- Kanjika

- Sandaki

METHODOLOGY

General method of preparation of sandhana kalpana.

ESSENTIAL INGREDIENTS

Kwata dravya: If kastoushadi's are used, if kwata preparation from wet drugs, they are to be collected freshly.

- If dry drugs are used they are freshly dried and they should be totally free from infestation
- **Drava dravya:** mentioned drava dravya in formulation should be prepared as per classical reference.
- **Madhura dravya:** sweetening agents like guda or sharkara is used, which should be properly dissolved in liquid media.
- **Prakshepaka dravya:** mentioned prakshepaka dravya are added to the solution in the fine powder form
- **Sandhan dravya:** dhataki pushpa- *Woodfordia fruticosa*
- Maduka pushpa- *madooka indica*
- Kinva- base residual of a fermentative preparation
- Yeast- a unicellular organism
- Selection of appropriate 'sandhana patra' may be mrtpatra(mud pot), wooden drums, cement tanks, glass jars of bigger size or stainless steel based on the requirement and convenient
- Before filling the medicine, proper dhupana of the patra should be done
- Patra is placed in husk to maintain the required temperature
- Kashaya or other liquid preparations specified in formulation as drava dravya should be prepared as per classical reference
- The specified sweetening agent is dissolved completely in the prepared drava dravya and is filtered once after dissolving sweetening agent to get rid of impurities present in it
- The patra which is placed in husk is carefully filled with liquid mixture, prakshepaka dravya and sandhana dravya are added to it
- This patra is closed temporarily with cloth and lid. Meanwhile onset of fermentation is observed daily for 3 to 5 days and soon after fermentation onset sandhi bandana of the pot is done

- The vessel is left undisturbed for 15 to 30 days and later the symptoms for completion of fermentation are looked for
- After confirming completion of fermentation, the vessel is opened and preparation is siphoned out
- Later they are packed in suitable container with neat label, for further therapeutic use.

OBSERVATIONS^[12]

Onset of fermentation	Completion of fermentation
1. Floating of prakshepaka Dravya over the liquid	1. Prakshepaka Dravya will be sunk to the bottom
2. Effervescence	2. No effervescence
3. Hissing sound	3. No hissing sound
4. Mild alcoholic odor and Taste	4. Strong alcoholic odor and Taste
5. Burning candle is put off	5. Burning candle is continues to burn
6. Lime water turns milky white	6. Lime water test negative

DOSAGE AND ADJUVANT

1 Pala (48gms) – general dose as per classics

It is taken along with equal quantity of water after food

Since these preparations have certain percentage of self generated alcohol they may cause gastric irritation. Hence they are to be administered in diluted form after food, not on empty stomach.

INTRODUCTION TO SARASWATARISTA

Saraswatarista is a polyherbal formulation traditionally used as brain tonic to improve memory. It is used in neurological disorder and in diseases like unmada, apasmara, alzheimer's diseases, schizophrenia etc. It contain 18 ingredients, among which bramhi is the main ingredient which is medya. In Ayurveda, we are lagging behind to explain the preparations in a scientific way by the mode of action of ingredients with their phytochemical constituents. If formulations are explained in such way it will be more beneficial to ayurvedic scholars, practitioners and for the students of Ayurveda for better understanding. Hence present article is an attempt to compile some of the information about the phytoconstituents of important drugs and their mode of action.

REF: B.R.Rasayanadhikara 73/178-192

Kwata dravya: Bramhi Panchanga-20pala

shatavari, vidarikanda, abhaya, usira, shunti, shatapushpa -each 5pala

jala – 1drona(12lts), reduced to 3lts

Madhura dravya: honey- 10pala, sugar-25pala

Sandhana dravya: dhataki pushpa- 5pala

Prakshepaka dravya: renuka, pippali, trivrit, lavanga, vacha, kushta, ashwaganda, vibhitaki, ela, vidanga, twak, swarna patra each 1karsha

RASAPANCHAKA OF INGREDIENTS

Drug name	Rasa	Guna	Veerya	Vipaka	Karma
Bramhi ^[13]	Tikta, Kashaya, madhura	Madhurasara	Sheeta	Madhura	Medhya, rasayana, swarya, hridya, smritivardaka
Shatavari ^[14]	Madhura, tikta	Guru, Snigda	Sheeta	Madhura	Rasayana, Medhya, pusti shukra stanya vardaka, balya
Vidhari kanda	Madhura	Guru, snigda	Sheeta	Madhura	Anticancer, anticonvulsant, antifertility, antioxidant, cardioprotective
Haritaki ^[15]	Kashaya pradana pancharasa	Laghu, ruksha	Ushna	Madhura	Haritaki patyanam srestam (cha.su.25/40), rasayana, vayastapaka, brimhana, smritiprada
Usheera ^[16]	Madhura, tikta	Laghu, snigda	Sheeta	Madhura	Trishnahara, dahashamaka, raktadoshahara, swedahara, vranaropaka
Shunti ^[17]	Katu	Laghu, snigda	Ushna	Madhura	vrshya, swarya, Kasahara, swasahara, ruchya, hridya
Mishreya	Madhura	Laghu, Snigda, tikshna	Sheeta	Madhura	Vatanulomana, Trishna-chardinigrahahara, hridya, raktaprasadana, vrishya
Pippali ^[19]	Katu	Laghu, Snigda, tikshna	Anushna	Madhura	Deepana, rasayana, vrishya, swasahara, Kasahara,
Trivrit ^[20]	katu, tikta, Katu, tikta	Laghu, ruksha, tikshna, Laghu, Snigda, tikshna	Ushna	Katu	Sweta trivrit-rechana, pittajwarahara, virechana, shotahara, vrinahra, kushtagna, kandugna
Lavanga ^[21]					
Vacha ^[22]	Katu, tikta		Ushna	Katu	Medhya, kantya, swaraprada, unmadarogahara, apasmarahara, bhutagna
Kusta ^[23]	Katu, madhuratikta	Laghu, ruksha	Ushna,	Katu	Shukrashodana, stanyajanana, srtavajanana, vrishya, garbhashaya uttejaka, raktashodana
Ashwaganda ^[24]	Tikta kashaya	Laghu, tikshna	ushna	Madhura	Balya, rasayana, kantivardaka, shukrala, Kasahara, kandugna, swasahara, vrinahara, shophahara
Vibhitaki ^[25]	Kashaya	Laghu, ruksha	Ushna	Madhura	Kasahara, netrya, keshya, krimigna, swarya, mukharogahara
Ela ^[26]	Katu, madhura	Laghu, ruksha	sheeta	Madhura	Swasahara, Kasahara, mutrakrichragna, hridya, mukhashodaka
Vidanga ^[27]	Katu, kashya	Laghu, ruksha, tikshna	ushna	Katu	Krimigna, garbhanirodhaka, rasayana, varnya, rasayana, shulahara
Twak ^[28]	Katu, tikta	Laghu, tikshna	ushna	Katu	Balya, mukharogahara, jantugna, kandugna, kantashuddhikara, kasahara

METHOD OF PREPARATION

The coarsely powdered kwata Dravya are taken in a clean bigger vessel with required quantity of water to prepare kwata. to prepared kwata sugar is added and stirred well and when it becomes cool honey should be added and stirred well.

Meanwhile dhataki pushpa is taken dried under sun and kept ready. Appropriate sandhana patra is selected and its dhupana is carried out and is kept in suitable place. Sugar and honey dissolved kwata is carefully poured into sandhana patra. Later coarse powder of prakshepaka Dravya and dhataki pushpa are added and the mixture is cautiously stirred. Swarna patra is dropped into the mixture and vessel is kept undisturbed by temporarily closing its mouth with a cloth and lid. onset of fermentation is observed daily for 3 to 5 days. Soon after fermentation onset, sandhi bandana of vessel is done. The vessel is left undisturbed for 15 to 30 days and later the symptoms for completion of fermentation are looked for, After confirming completion of fermentation, the vessel is opened and preparation is siphoned out. the medicine will be reddish color with alcoholic odor and bitter-sweet sharp taste.

Karma: ayu, veerya, smriti, medha, kantivivardhayeth

Vakshuddikara, hridya, rasayana

Balakancha, yunancha, vriddancha sadahita

Parama ojakarah

Used in swarabhanga, aspasta bashanam

Rajadosha, shukradoshinam

Sarvadoshahara

Atyadyayana geetadivitta smriti bala narah

Chittasantosha smritinchasya

DISCUSSION

PROBABLE MODE OF ACTION OF DRUGS EXPLAINED AYURVEDIC POINT OF VIEW

- As bramhi is having Madhura rasa, sheeta veerya, Madhura vipaka it acts as Medhya, hridya, rasayana smritivardhaka and is having tikta and Kashaya rasa it acts as swarya, Kasahara and swashara.
- In astangahridaya uttaratantra 40 chapter explained 'vyapasmritim bramhi' which is best in loss of memory
- Shatavari is having madura rasa, sheeta veerya and Madhura viapaka hence may act as rasayana, pusti vardaka, shukra and stanya vardaka.
- Haritaki contain pacharasa and Madhura vipaka so may act as rasayana, vayastapaka, smritiprada, it is having Kashaya rasa pradana hence can also be used in swasa, kasa and shula.

- In charaka sutra stana 25th chapter mentioned 'Haritaki patyanam srestam'
- Shunti and pippali are having katu rasa pradhana can be used for swasa and kasa conditions and these are having Madhura vipaka so can act as rasayana, vrishya
- Vacha though having katu rasa, katu vipaka and ushna veerya by Prabhava it may act as Medhya and is used in diseases like unmada and apasmara
- Twak is having katu, tikta and Madhura rasa, ushna veerya and katu vipaka it act as kanta shuddhikara, and is used in swasa and kasa conditions
- In rasa tarangini 15th chapter Swarna Bhasma having Madhura rasa it acts as vrishya, hridya, netrya and 'paramancha Medhyam'. And is useful in 'pumsavana samskara'.

MODE OF ACTION

ASHWAGANDHA

- Withanamides is vital bioactive constituent that protect from beta amyloid induced toxicity
- Glycowithanolides, withaferin A and sitoindosides extracted from roots has significantly reversed cognitive defects in Alzheimer's disease and other neurodegenerative diseases such as Parkinson's disease, huntington's disease in which nutritic atrophy is the major cause
- Ashwaganda shows its therapeutic potential by inhibiting the production of amyloid beta through neuroinflammatory and epigenic pathways in alzheimer's disease in vitro model.
- Ashwagandha is known to, alter the oxidative stress markers of the body, neuroprotective activity, free radical scavenging activity, increase superoxide dismutase and catalase activities.

VIDANGA

Antifertility activity: embelin extracted from vidanga altered the testicular histology and glycogen, gametogenic counts and accessory sex gland fructose administered subcutaneously. the compound is suggested to possess anti androgenic activity.

BRAMHI

- The bacosides present in the bramhi promote the repair of damaged neurons by upregulating neuronal synthesis and kinase activity.
- The bacosides aids in the restoration of synaptic activity, which ultimately leads to nerve impulse transmission(singh and dhawan 1997). This nerve impulse transmission, plays a

vital role in promoting healthy cognitive functions like attention span, focus, concentration, learning and memory.

- Bacosides A possesses nitric oxide which permits the lightening of aorta and veins in order to enhance the blood flow freely throughout the body.
- Anti cancer activity: Bacosides A and B present in the ethanolic extract of brahmi possess anti tumor property.

SHATAVARI

- The root extract of shatavari is prescribed to increase breast milk secretion during lactation.
- Anti depressant activity : methanolic extract of shatavari has anti depressant activity by inhibiting MAO-A AND MAO-B AND through interaction with adrenergic, dopaminergic and GABAergic systems.
- Shatavari inhibits acetylcholinesterase enzyme in specific brain regions, thus shows nootropic and anti amnesic activity.

VIDHARIKANDA

- Flavanoids present in vidarikanda will exhibit cardioprotective, neuroprotective activity
- B sitosterol can be used as nutritional supplement
- Vidarikanda improves RBC activity and increases level of LH, FSH, testosterone and gonadotropin release hormone

HARITAKI

- Chebulinic acid extracted from leaves, fruits, and bark shows cardioprotective, hypolipidemic and hypocholesterolemic activity. This showed cardioprotective as it elevates serum HDL-C and alleviates the serum phospholipid, cholesterol and triglyceride levels
- Ellagic acid extracted from haritaki exhibit favourable neuroprotective activities against H₂O₂ induced toxicity
- Acute administration of haritaki ethanol extracts improves learning and memory recall by suppressing oxidative stress
- Antiaging activity: T.chebula has the properties that increase physical endurance and maintain the average plasma level of catecholamine and MAO

CONCLUSION

Sandhana Kalpana is unique preparations of ayurveda, which are prepared by fermentation procedure. Tikshnadi gunas of madya helps in quick absorption and assimilation of the medicine in the body, hence there will be more bioavailability and therapeutic efficacy in these preparations. Saraswatarista one of the arista preparation of this sandhana Kalpana, taken reference from bhaishajya ratnavali rasayana adhikara which is explained as sarvadoshahara, paramaojakara and will increase the ayu, veerya, smriti, medha and kanti in a person hence it is mainly administered in neurological and neurodegenerative disorders.

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