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## A REVIEW ON SANDHANA KALPANA

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### ABSTRACT

Rasashastra and Bhaishajya Kalpana holds significant importance within Ayurveda as it involves the preparation of medicines to address various ailments. Ayurveda utilizes diverse formulations, incorporating both herbal and mineral elements, either in isolation or in combination, for healing purposes. Sharangadhar Samhita, an Ayurvedic text, elucidates the concept of these formulations. Among the essential preparations, Sandhan Kalpana, which involves biomedical fermented formulations, plays a crucial role in treating a wide range of diseases and promoting overall health. The process of Sandhan entails combining liquid substances such as Kwath, Swarasa, and other liquid preparations, along with sweetening agents like jaggery, honey, or sugar, as well as praksepa dravya (fine powder of medicinal drugs) and Sandhan dravya (fermentation agents like Dhakti Pushpa and Madhuka pushpa). The mixture is then placed in a mud pot or inert vessel for a specific period, facilitating the fermentation process. Sandhan kalpana, being an essential Ayurvedic remedy, is commonly utilized by customers due to its appealing taste, fast-acting nature, easy administration, extended shelf life, and convenient preparation. It serves not only as an effective treatment for various ailments but also as a beneficial appetizer.

**Key-words: - Sandhan Kalpana, Kwath, Swarasa, Prakshepa Dravya, Fermentation, Quality control**

## Introduction

Ayurveda, a traditional system of medicine, is centered around the belief that wellbeing and healing are achieved by maintaining harmony among the mind, body, and spirit. Its focus lies in preventing and curing ailments rather than simply combating diseases, ensuring prolonged health and comfort. Ayurveda utilizes natural resources to address the root cause of illnesses and restores balance while promoting a healthy lifestyle to prevent imbalances in the body. One essential branch of Ayurveda is Rasashastra & Bhaishajya Kalpana, which deals with the preparation of medicines. This branch employs herbal and mineral combinations to treat various diseases effectively. By combining multiple herbs, Ayurveda maximizes therapeutic effects that may not be achievable with individual components alone.

Ayurveda formulates medicines based on the nature of the ingredients, their chemical constituents, pharmaceutical properties, ease of administration, shelf life, and other factors. Various types of formulations exist, such as Panchvidh Kashaya Kalpana, Sneha Kalpana (oil preparation), Sandhan Kalpana (biomedical fermented formulations), Avaleha Kalpana (medicated semisolid preparation), Vati Kalpana (tablet), and Churna Kalpana (powder). Sandhan Kalpana, an important formulation, utilizes fermentation to create a spiritous liquid that is effective in treating diseases and promoting overall health. In Sandhan Kalpana, drugs are processed through multiple steps and combined with various liquids like decoctions and juices, along with substances like jaggery and honey. The fermentation process enhances the

stability, palatability, and clinical outcomes of the medicines, making Sandhan Kalpana unique and effective. From an etymological perspective, Sandhan means "mixing" or "combining." The process involves the exciting amalgamation of several ingredients to create exhilarating attributes through fermentation. It is a method of union and combination, where medicines are mixed and allowed to rest for a specific period to achieve fermentation.

## Chronological development of Sandhana Kalpana

Rig Veda - A significant portion of the ninth mandala of Rig Vedic text discusses fermented Soma Rasa, with approximately 610 verses dedicated to this subject.

Atharva Veda - It clearly states that madya, used for medicinal purposes, is known as arista, and the preparation process is referred to as Abhishava prakriya.

Yajur Veda - Abundant references describing various Ahara Kalpanas, including Sandhana Kalpana, can be found in Yajur Veda.

Kautilya's Arthashastra - Six common types of Sura are mentioned, namely, Maireya, Prasanna, Asava, Arishta, Medaka, and Madhu.

Charaka Samhita - It describes 9 Yoni of Asava and 84 fermentative products. Acharya Charaka emphasizes six essential factors to consider before administering any Madya: Anna, Pana, Vayas, Vyadhi, Bala, and Kala.

Sushruta Samhita - Acharya Susruta is credited with using Sandhana Kalpana in surgical practice. The text mentions a total of 11 Asava Arishtas and 46 Madya Varga serving various therapeutic purposes.

Ashtanga Hridaya and Astanga Sangraha - The use of Dhataki Pushpa as a fermentation initiator is documented for the first time. The texts provide a helpful guideline for physicians regarding the gradation of Shukta Varga products based on their laghuta. They list a total of 14 Asava Arishta in Ashtanga Sangraha and 8 in Ashtanga Hridaya.

Kashyapa Samhita - Abhishava is included in seven fundamental Kalpanas, and a total of 60 Asavarishtas are mentioned in Part I, 6th chapter Asavadhikar.

Sharangadhara Samhita - It defines general principles and measures for fermentation based on the source/raw material, along with various classifications.

A modern metabolic process that utilizes an organic molecule as the final electron acceptor to produce energy from sugar or another organic compound without oxygen or an electron transport system. This technique involves the use of microorganisms for food preservation. Yeast cells secrete invertase and zymase enzymes that convert sugar to ethanol and carbon dioxide during fermentation without oxygen. Sandhana Kalpana, one of the most effective pharmaceutical and therapeutic methods, has its origins in the Vedas or Puranas. It was referred to as Madya (Alcohol), Sura, Somarasa, and other names and was carefully prepared before being used as medicine. In later times, it became more popular as an alcoholic beverage but lost some of its medicinal value, aiming to preserve and extend its shelf life.

### **Significance of Sandhan Kalpana**

It is a self-generated alcohol preparation that acts as a preservative, offering

significant benefits to the medical community. Its longer shelf life and increased potency make it a superior and easily storable preparation. The sharp properties of Madya aid in rapid assimilation and absorption of medication, enhancing its therapeutic efficacy and bioavailability. Being a liquid, it can be administered to patients of all ages, including children and the elderly. Moreover, it boosts the activity of digestive enzymes, providing additional benefits. The use of palatable sweetening agents in Sandhan Kalpana also adds essential nutrients to the body.

### **Various types and properties of Sandhana kalpana**

1. Sura - Fermented liquor prepared using cooked rice, barley, etc., categorized into Prasanna, Kadambari, Jagala, Medaka, and Surabija. It exhibits properties like being heavy, improving physical strength, and aiding in various conditions like inflammation, abdominal tumors, piles, and dysuria.
2. Sidhu - It comes in two types: Apakwa (Shita) rasa Sidhu and Pakwarasa Sidhu. They provide benefits such as improving digestion, relieving constipation, and acting as a cardiac tonic.
3. Varuni - This liquor is prepared with the juice of Tala and Kharjura and possesses properties like being cardiac tonic, lighter than Sura, and helpful in conditions like pain, constipation, cough, and dyspnea.
4. Asava - Prepared without boiling the drug in water, it strengthens the body and is beneficial to the heart, also mitigating sleeplessness.
5. Arishta - Boiled/cooked source material is used to prepare it, and it is useful in treating G.I.T. disturbances, fever, spleen-related issues, and as an appetizer.

6. Shukta - Made with roots, tubers, and fruits added with Sneha and Lavana. It helps with bleeding disorders and gastric distension.

7. Tushodaka - Prepared by pounding uncooked Yava along with Tusha (Satusha) and used for conditions like anemia, antihelminthic, and relieving urinary system pain.

8. Souviraka - Fermentation of Yava after removing its husk, offering benefits like being a digestive, anti-flatulent, and helpful in conditions like piles and malabsorption syndrome.

9. Kanjika - A fermented product prepared with Manda of half-boiled Kulmasha, Dhanya, etc., beneficial for improving taste and relieving halitosis.

10. Sandaki - A fermented product prepared with radish (Mulaka), mustard (Sarshapa), etc., with properties like improving taste and alleviating Pitta and Kapha imbalances.

Sandhan dravya or fermentation products play a vital role as natural initiators in the fermentation process. Key fermentation products include Dhataki Pushpa, Madhuka Pushpa (Mahua flower), and yeast. Proper cleaning and preparation of these initiators are essential to prevent fungal growth. The duration of Sandhan Kriya (Fermentation) can vary from seven days to six months, depending on factors like the nature of drugs, components, sweeteners, location, and seasonal conditions. The process may take up to two weeks in summer or several months in winter.

### Discussion

The effectiveness of Sandhana kalpana in Ayurvedic practice has motivated us to present this review paper to all stakeholders of Ayurveda. The authors have discussed essential aspects related

to the preparation of Sandhana kalpana, emphasizing its significance in advancing this form of medication. Khan et al. acknowledge the importance of medicinal plants as a crucial source of life-saving drugs worldwide, and the utilization of traditional knowledge in medicine, healing, and biodiversity conservation has gained significant importance.

Although rural communities have been unknowingly using microorganisms for various purposes, there is a lack of effort in documenting and preserving this valuable knowledge. The art of preservation and enrichment of vegetables through microbial systems, as well as the production of traditional beverages from plant material, requires attention and documentation.

The North-Eastern states of India, with their rich traditional knowledge, particularly from tribal communities living in hilly regions, have contributed significantly to the field of Ayurveda. Recent research has validated Ayurvedic knowledge, showcasing the development of mutant strains of microorganisms for ethanol production using traditional techniques. Probiotic bacteria found in fermented foods and dairy products are now considered important in the preparation of Sandhana kalpana due to their potential health benefits. Sandhana kalpana products have demonstrated superiority over other Ayurvedic dosage forms, such as Arjunarishta, which is used for cardiovascular disorders.

Pharmacogenomics, the study of genetic factors affecting drug response, has been a longstanding practice in Ayurveda, leading to the use of similar formulations with slight variations for individual

patients. Similarly, the concept of nutrigenomics aligns with the use of Sandhana kalpana products like Kanji, Takra, Sidhu rasa, and Varuni in routine diets for their nutritive and disease-preventing properties.

Additionally, combinatorial biosynthesis is gaining popularity for generating novel natural products, including those used in Sandhana kalpana formulations. Integrating these modern concepts with Ayurvedic drug delivery principles may lead to promising advancements in this field.

### Conclusion

Sandhana kalpanas, renowned Ayurvedic formulations widely used for therapeutic purposes. These formulations not only possess nutritive value but also act as appetizers, making them even more beneficial. Consumers prefer these preparations due to their advantages like palatability, quick action, easy administration, and extended shelf life. Classical references about Sandhana Kalpana are prevalent throughout Ayurvedic literature, and this legacy continues with contemporary Ayurvedic practitioners. In ancient times, Sandhana kalpas were prepared using sandhan patra placed in specific conditions to ensure a stable fermentation process. Today, fermentation is gaining momentum in various scientific fields, including biotechnology, pharmacy, and microbiology.

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