

AUTOMATIC MACHINERY IMPACT ON AYURVEDIC MEDICINE PRODUCTION – REVIEW ARTICLE

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ABSTRACT

Ayurvedic medicine is a traditional system of medicine that has been practiced in India for thousands of years. Ayurvedic medicine utilizes natural herbs, minerals, and other ingredients to create remedies that are tailored to an individual's unique constitution and health needs. Automatic machinery can have a significant impact on the production of Ayurvedic medicines. Ayurvedic medicine production traditionally involves manual processes that can be time-consuming and labor-intensive. However, the introduction of automatic machinery can greatly enhance the efficiency, accuracy, and safety of Ayurvedic medicine production. While automatic machinery can bring numerous benefits to Ayurvedic medicine production, there are potential negative impacts to consider. One concern is the potential loss of traditional

knowledge and skills, as automated processes may replace manual methods that have been passed down through generations. Additionally, the standardization and mechanization of Ayurvedic medicine production may compromise the use of locally-sourced, seasonal, and sustainably harvested ingredients, which are fundamental to Ayurvedic principles.

KEYWORDS: Automatic Machinery, Ayurvedic medicine, Positive impact, Negative impact.

INTRODUCTION

India is known for its traditional medicinal systems—Ayurveda, Siddha, and Unani. Medical systems are found mentioned even in the ancient Vedas and other scriptures. The Ayurvedic concept appeared and developed between 2500 and 500 BC in India.^[1] Ayurveda is perceived as one of the most ancient and well documented system of medicine equally relevant in modern times. Acharya Charaka explains Ayurveda in the form of Hetu, Linga and Aushadha i.e Trisutra. Here Aushadha is explained in the form of medicine.^[2] Chikitsa depends totally upon four factors which are known as Chikitsa Chatushpada. Dravya i.e used as Aushada is one of the four factor of Chikitsa Chatushpada which with their proper qualities responsible for the cure of any kind of diseases.^[3]

Quality Ayurvedic herbal medicines are potential, low-cost solutions for addressing contemporary healthcare needs of both Indian and global community.^[4] Automatic machinery can have a significant impact on the production of Ayurvedic medicines. Ayurvedic medicine production traditionally involves manual processes that can be time-consuming and labor-intensive. However, the introduction of automatic machinery can greatly enhance the efficiency, accuracy, and safety of Ayurvedic medicine production.

While automatic machinery can bring numerous benefits to Ayurvedic medicine production, there are potential negative impacts to consider. One concern is the potential loss of traditional knowledge and skills, as automated processes may replace manual methods that have been passed down through generations. Additionally, the standardization and mechanization of Ayurvedic medicine production may compromise the use of locally-sourced, seasonal, and sustainably harvested ingredients, which are fundamental to Ayurvedic principles.

Ayurvedic medicine classifies into several categories based on their properties and uses. Some of the common types of medicines used in Ayurveda include.

Herbal Medicines: Ayurveda extensively uses herbs and plants for medicinal purposes. Herbal medicines are made from various parts of plants such as leaves, stems, roots, flowers, and fruits. Examples of herbal medicines used in Ayurveda include Triphala, Ashwagandha, Brahmi, Neem, and Tulsi.

Mineral Medicines: Certain minerals and metals are also used in Ayurveda for their therapeutic properties. These minerals are purified and processed before being used in medicines. Examples of mineral medicines used in Ayurveda include Shilajit, Loha Bhasma (iron), and Makardhwaja (mercury-based medicine).

Animal-derived Medicines: Some animal-derived products are also used in Ayurvedic medicines. These products are obtained from animals such as cows, goats, and deer, and are used for their medicinal properties.

Ayurvedic Formulations: Ayurveda also uses various formulations that combine multiple herbs and other ingredients to create specific medicines for various ailments. These formulations are called Swaras, Kalk, Kwatha, Heem, Phant, Vati, Gutti, Churna, Arkas, Lehyas, hurbal oil, Tail, Ghrithas, Bhasama, Parpati etc.

Bhaishajya Ratnavali: Bhaishajya Ratnavali is a popular Ayurvedic text that focuses on formulations and preparations of Ayurvedic medicines. It includes numerous references to Vati formulations for various diseases. **Ayurvedic Pharmacopoeia:** The Ayurvedic Pharmacopoeia of India (API) is a regulatory guideline that provides standards for the preparation and quality control of Ayurvedic medicines. It includes monographs on various Vati formulations, describing their ingredients, preparation methods, and therapeutic uses.

AIM OF STUDY

Automatic machinery impacts the manufacturing process of Ayurvedic medicines is crucial in today's modern era. As the demand for Ayurvedic medicines increases, many manufacturers are incorporating automated machinery into their production processes. Studying the impact of automatic machinery on Ayurvedic medicine production is necessary to understand its effects on the quality, safety, efficacy, and authenticity of the final products. This includes evaluating the potential for contamination, loss of bioactivity in herbs, changes in processing techniques, and standardization of formulations. Proper research and analysis of automated machinery in Ayurvedic medicine manufacturing can help ensure that the traditional wisdom and principles of Ayurveda are upheld while meeting modern production standards.

MATERIALS AND METHODS

General Guideline of Ayurvedic Medicine production by Automatic machinery

- 1. Sourcing of raw materials:** The first step in Ayurvedic medicine production is sourcing of high-quality raw materials, such as herbs, minerals, and animal products, from reputable suppliers. These raw materials should be sourced from sustainable and ethical sources to ensure their quality and purity.
- 2. Cleaning and processing of raw materials:** The raw materials are thoroughly cleaned to remove impurities, such as dirt, dust, and debris. Depending on the type of raw material, they may also undergo processing methods such as drying, grinding, and extraction to obtain the desired form and consistency.
- 3. Formulation preparation:** The cleaned and processed raw materials are then formulated according to the specific Ayurvedic medicine recipe or formulation. This may involve blending and mixing different herbs, minerals, and other ingredients in precise proportions, as per the traditional Ayurvedic texts or under the guidance of experienced Ayurvedic practitioners.
- 4. Quality control:** Quality control measures are implemented at various stages of the production process to ensure that the Ayurvedic medicine meets the required quality standards. This may involve testing the raw materials for purity, potency, and authenticity, as well as conducting tests during different stages of production, such as in-process testing and finished product testing.
- 5. Automatic manufacturing:** Once the formulation is prepared and quality control measures are in place, the automatic manufacturing process begins. This may involve using automated machinery and equipment for processes such as mixing, grinding, filling, and packaging, depending on the specific product and production scale.
- 6. Packaging and labelling:** After the Ayurvedic medicine is manufactured, it is packaged in suitable containers, such as bottles, jars, or packets, and labelled with the necessary information, such as the name of the medicine, ingredients, dosage instructions, and batch number.
- 7. Storage and distribution:** The finished Ayurvedic medicines are stored in appropriate conditions to maintain their quality and potency. They are then distributed to the market for sale, following local regulations and guidelines for manufacturing, packaging, and labeling of Ayurvedic medicines.

Here are some ways in which automatic machinery can impact Ayurvedic medicine production

Positive impact

- 1. Increased production capacity:** Automatic machinery can significantly increase the production capacity of Ayurvedic medicines. With automated processes, production can be scaled up to meet growing demand, resulting in higher productivity and increased availability of Ayurvedic medicines in the market.
- 2. Improved consistency and quality:** Automatic machinery can ensure consistent quality in Ayurvedic medicine production. Automated processes can be precisely controlled, resulting in consistent proportions of ingredients, uniform mixing, and standardized manufacturing processes. This can lead to improved quality control, reduced batch variations, and increased product efficacy.
- 3. Enhanced accuracy and precision:** Automatic machinery can provide precise measurements and dosages of ingredients, leading to accurate formulations of Ayurvedic medicines. This reduces the risk of human error in measuring and mixing ingredients, resulting in more reliable and consistent products.
- 4. Reduced contamination and cross-contamination:** Automatic machinery can help minimize contamination and cross-contamination in Ayurvedic medicine production. Automated processes can be designed to prevent contact between different ingredients, reducing the risk of cross-contamination. Additionally, automated cleaning processes can be incorporated into the machinery to maintain hygiene and minimize the risk of contamination during production.
- 5. Improved safety for workers:** Ayurvedic medicine production often involves handling of potent medicinal herbs and ingredients that can pose risks to workers. Automatic machinery can reduce the need for manual handling of such ingredients, minimizing the risk of occupational hazards and ensuring the safety of workers.
- 6. Faster production times:** Automatic machinery can accelerate the production process of Ayurvedic medicines, reducing production time and increasing overall efficiency. This can lead to faster turnaround times, quicker product availability, and improved customer satisfaction.

While automatic machinery can offer several benefits in terms of efficiency and productivity, there are potential negative impacts of using such machinery in Ayurvedic drug production. Some of these negative impacts may include:

Negative Impact

- 1. Loss of authenticity:** Ayurvedic medicines are traditionally prepared using specific techniques and processes that may be compromised or altered when automated machinery is used. This can result in a loss of authenticity, as the unique characteristics and properties of Ayurvedic herbs may be compromised, affecting the overall quality and effectiveness of the final product.
- 2. Contamination risk:** Automatic machinery may pose a risk of contamination, especially if not cleaned and maintained properly. Contamination with foreign substances or microorganisms can adversely affect the safety and purity of Ayurvedic medicines, leading to potential health hazards for consumers.
- 3. Standardization challenges:** Ayurvedic medicines are often customized based on individual patient needs, and the use of automated machinery may pose challenges in achieving consistent standardization of formulations. This can result in variations in potency, efficacy, and safety of the final product.
- 4. Overemphasis on quantity over quality:** Automatic machinery may prioritize quantity and speed over quality, which can compromise the traditional Ayurvedic principles of using high-quality ingredients and meticulous processing techniques. This can result in subpar quality Ayurvedic medicines that may not deliver the desired therapeutic effects.
- 5. Loss of traditional knowledge and skills:** Ayurvedic medicine production has traditionally relied on the expertise of experienced practitioners who possess traditional knowledge and skills. The use of automated machinery may lead to a loss of these traditional skills, potentially impacting the authenticity and efficacy of Ayurvedic medicines.

RESULT AND DISCUSSION

In use of automatic machinery in Ayurvedic medicine production can bring several benefits, including increased production capacity, improved consistency and quality, enhanced accuracy and precision, reduced contamination, improved safety for workers, and faster production times. However, it is essential to strike a balance between automation and traditional Ayurvedic practices to ensure that the essence and principles of Ayurveda are preserved in the production process.

It is important to carefully evaluate and mitigate these potential Positive and Negative impacts of automatic machinery on Ayurvedic drug production to ensure that the traditional

principles and values of Ayurveda are upheld, and high-quality, authentic, and safe Ayurvedic medicines are produced for the benefit of patients.

CONCLUSION

Ayurvedic medicines should be produced in compliance with local regulations and guidelines for safety, quality, and efficacy. Additionally, it's crucial to consult with qualified Ayurvedic practitioners, herbalists, and experts in traditional medicine to ensure the accuracy and safety of the Automatic Machinery production process.

REFERENCES

1. V. Subhose, P. Srinivas, and A. Narayana, "Basic principles of pharmaceutical science in Ayurvēda," *Bulletin of the Indian Institute of History of Medicine*, 2005; 35(2): 83–92.
2. Agnivesha; Charaka Samhita, Dridhabala with the Ayurveda-Dipika Commentary of Cakrapanidatta edited by Dr. Gangasahaya Pandeya, Chaukhambha Bharti Academy, Reprint – 2010, Chaukhambha Bharti Academy, Varansi; Sutra Sthana chapter 1 versus 24, p.8.
3. Agnivesha; Charaka Samhita, Dridhabala with the Ayurveda-Dipika Commentary of Cakrapanidatta edited by Dr. Gangasahaya Pandeya, Chaukhambha Bharti Academy, Reprint – 2010, Chaukhambha Bharti Academy, Varansi; Sutrasthana chapter 9 versus 3, p.191.
4. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4342652/>