

Exploration of moisture content in Shatavari (*Asparagus racemosus* Willd.) and its relevance in Quality evaluation

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Abstract

The present study investigates the moisture content of *Asparagus racemosus* Willd. (commonly known as Shatavari), a medicinal herb esteemed in Ayurvedic practice for its therapeutic efficacy. Moisture plays a pivotal role in determining the stability, shelf life, and pharmacological potency of herbal drugs. Excessive moisture can accelerate microbial proliferation, chemical degradation, and undesirable changes in physical properties. The moisture level was analyzed using the Loss on Drying (LOD) method. The final moisture content was found to be 9.090%, aligning with standard permissible limits for dried botanical products. These findings emphasize the criticality of moisture control during storage and processing. This study advocates for stringent quality assessment measures and supports further exploration into drying techniques and environmental conditions for crude drug stabilization.

Key words : *Asparagus racemosus*, Shatavari, Loss on drying, Moisture content, Herbal quality control.

Asparagus racemosus Willd., belonging to the family Liliaceae, is widely distributed in tropical and subtropical regions of India. Commonly referred to as Shatavari, it is known for its adaptogenic, rejuvenating, and fertility-enhancing properties. The term “Shatavari” translates to “the one who possesses a hundred husbands”, symbolizing

its potent influence on female reproductive health. In Ayurvedic literature, it is described as a prime tonic for women, akin to *Withania somnifera* (Ashwagandha) for men. Shatavari is also acclaimed for its immunomodulatory, anti-aging, and vitality-boosting effects.

The therapeutic efficacy of medicinal

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plants is significantly influenced by their moisture content. It is an essential parameter in pharmacognostical quality control. Elevated moisture content can initiate microbial contamination, hydrolytic degradation, and loss of bioactive constituents, while optimum drying ensures stability and safe storage. The Loss on Drying (LOD) method is frequently used to determine the percentage of volatile matter, including water, in plant materials by heating under specified conditions.

This study aims to evaluate the moisture content of the dried root of *Asparagus racemosus* using the LOD method, thereby assessing its compliance with standard quality norms. For the preparation of the manuscript relevant literature¹⁻⁴ has been consulted.

Aim :

To determine the moisture content in the crude drug sample of *Asparagus racemosus* Willd. (Shatavari).

Objective :

To quantify the percentage of moisture present in a sample of Shatavari using the Loss on Drying method.

Materials Required :

- Crude drug sample (*Asparagus racemosus* Willd.)

Instruments and Apparatus :

- Petri dishes or weighing dishes
- Analytical balance
- Hot air oven
- Desiccator

- Spatula, gloves, tongs

Sample procurement :

The crude drug sample was procured from M/S Parul Ayurved Pharmacy, Limda, Taluka – Waghodiya, District – Vadodara, Gujarat (License No. GA/1842). The analysis was conducted in the Quality Control Laboratory, Parul Institute of Ayurved.

Sample preparation :

The petri dish was cleaned and dried in a hot air oven at 110°C for 30 minutes. It was then cooled in a desiccator for 15 minutes to prevent moisture reabsorption.

Weighing process :

- Weight of empty Petri dish (W1): 50.612 g
- 2 g of the powdered drug was placed in the dish
- Weight of dish with sample (W2): 52.614 g

Drying process :

The sample was subjected to drying in a hot air oven at 110°C. Weight readings were recorded at different intervals until a constant weight (W3) was achieved :

- At 12:30 PM – W3 = 52.438 g
- At 2:30 PM – W3 = 52.429 g
- At 4:30 PM – W3 = 52.429 g

Moisture content Calculation :

Moisture Content (%) = $[(W2 - W3) / (W2 - W1)] \times 100$

- At 12:30 PM: $(52.614 - 52.438) / (52.614 - 50.612) \times 100 = 8.791\%$

(1961)

- At 2:30 PM & 4:30 PM: $(52.614 - 52.429) / (52.614 - 50.612) \times 100 = 9.240\%$
Average Moisture Content: $(8.791 + 9.240 + 9.240) / 3 = 9.090\%$

Observations :

The average moisture content of the Shatavari sample was determined to be 9.090%, which falls within the acceptable range for dried botanical materials (typically 8–10%). This indicates an effective drying process and suggests minimal residual moisture, thereby ensuring product stability.



Figure 3 Weight after drying at 12.30 pm

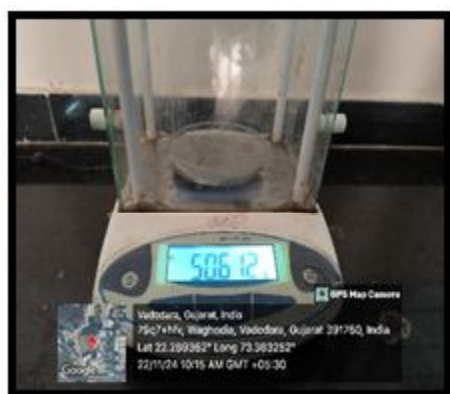


Figure 1 Weight of Empty Petri Dish (W1)



Figure 4 Weight after drying at 2.30 pm

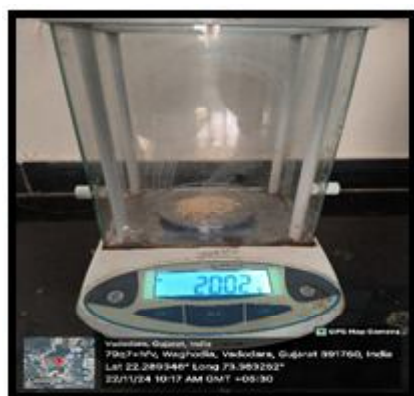


Figure 2 Weight of Crude Drug (W2)



Figure 5 Weight after drying at 4.30 pm

The quality and stability of herbal formulations are directly impacted by moisture content. In this study, the LOD method was successfully utilized to determine the moisture percentage in a crude drug sample of Shatavari. Accurate and repeated weighing ensured that the final moisture values were reliable. The recorded variation in moisture at different time intervals demonstrates the importance of achieving a constant weight to ensure complete dehydration.

Environmental factors, including humidity and temperature, can lead to moisture reabsorption, especially in hygroscopic substances. Proper storage in airtight containers and controlled environments is recommended. As the final moisture level remained within the permissible limits, the sample qualifies for safe storage and potential pharmaceutical application.

The moisture content of *Asparagus racemosus* Willd. was effectively analyzed using the Loss on Drying method, with an average value of 9.090%. This conforms to standard quality benchmarks and affirms the reliability of the sample for further use in formulation and therapeutic applications.

Accurate assessment of moisture is indispensable for maintaining the efficacy, safety, and longevity of herbal products. Future investigations may focus on optimizing drying techniques and storage parameters to further enhance product stability.

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