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REVIEW ARTICLE

A Critical Analysis of Therapeutic Properties of Millets Mentioned in Ayurvedic Samhita

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ABSTRACT
The Yajurveda is an ancient text that reflects the knowledge, practices, and beliefs of the people during that time (around 1500-500 BCE). The mention of specific millet types, such as foxtail millet, Proso millet, and barnyard millet, is evidence of the agricultural knowledge and practices of the Vedic society. Ayurveda embraces both preventive and therapeutic approaches to medicine. The importance of diet in Ayurveda is underscored in Triupastambha, and it is also referred to as Mahabhaishajya. The risk of different health disease is increasing due to today's food habits. And for preventive and therapeutic way Trina Dhanya (Millets) is the best traditional food item explained by acharyas in various Samhitas. This research paper aims to raise awareness and healing properties in many diseases about Trina Dhanya (Millets) and their utilization in accordance with Ayurveda for the benefit of society from references of different Samhita. In the millets ayurveda includes the dravya are Gavedhuka, Shyamak, Ragi, Nivaar, Kodrava, Chinak, Vajrannam, Kangu, Yavnaal. So, these all varieties of millets are beneficial for health and having most of the healthy Guna which are explained by different acharyas in different samhitas with practical knowledge in daily use.
Keywords: *Millets, Diet, Mahabhaishajya, Gavedhuka, Shyamak, Nartaki, Neevara, Koradusha, Cheenaka, Kangu, Yavnaal.*

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INTRODUCTION

The mention of millets in the *Yajurveda* does indicate that millet cultivation and consumption were common during the Vedic period, which is generally associated with the Indian Bronze Age (around 1500-500 BCE). Millets have been important staple crops in various parts of India for thousands of years, and they continue to be cultivated and consumed in some regions to this day [1].

It's important to view ancient texts like the *Yajurveda* in their historical and cultural contexts. These texts provide valuable insights into the ancient way of life, including agriculture and food practices, and have been foundational in shaping the culture and traditions of the Indian subcontinent.

Kalidasa (4-5th AD), in his legendary literary masterpiece '*Abhijnana Shakuntalam'*, has sage *Kanva* pouring foxtail millet while bidding farewell to *Shakuntala* in *Dushyanta's* court, which indicates the auspicious nature attributed to this millet. In the 10th-12th Century AD *Varaha purana*, it is mentioned that God Srinivasa is favorable to the one who offers foxtail millet.

Kautilya's Arthashastra says *Kodrava* (Kodo millet), and *Priyangu* (foxtail millet) will increase three times the original quantity when cooked. Grains will increase twice the original quantity when moistened. and two and half times when soaked to sprouting condition [2].

According to ayurveda, the main pillar among the three pillars in the diet, also known as *Mahabhaishajya* and considered in *Triupastambha*. [2] By making certain changes in diet and lifestyle, many diseases can be avoided. *Trina dhanya*, which is described in ayurvedic texts, has excellent nutritional value and medical properties, making it suitable for use as both food and medicine. Its development can also offer a cost-effective food option for underdevelopment countries. All the millets which are describing here are having curative and preventive properties. because of today's lifestyle like unhygienic food, unhealthy diets, lack of physical activity, and consumption of alcohol and tobacco they all can leads to many different diseases like stroke, coronary heart disease, hypertension, atherosclerosis, some form of cancers, Type 1 diabetes, dental caries, and nutritional anemia can arise. Most of the foods are high in calories, sugar and bad fat. Which causes sever health risk. To avoid the negative health risks, your diet needs to be nutritional and diverse. This nutritional food is maintaining the *varna, prasannata, Sukh, Santosh, Pushti, Bal* and *Medha* these all depended on the food. [3].

On critical analysis of *Rasa-panchaka*, it is observed that millets are predominantly *Kashaya-Madhura* (astringent and sweet) in *Rasa* (taste), *Katu* (pungent) in *Vipaka, Sheeta* (cold) *Viryatmak* (potency), *Laghu* (light) and *Ruksha* (dry) *Guna* (property), and *Lekhana* (scarifying) and *Kledashoshana* (dries up excessive moisture) in *Karma* (action) [4].

The Hon'ble Prime Minister of India, aims to make IYM 2023 a "People's Movement" and also to position India as the "Global Hub for Millets." [5] Traditional foods prepared from barnyard and other millets such as idly, dosa and murukku are very popular in parts of southern India. Sorghum and millets are used for developing various value-added products like biscuits, sweets, vermicelli, ready mixes and multi-grain atta. In some regions minor millets remain cultivated only on a small scale but are culturally important for particular foods stuffs, such as ritual breads made from brown top millet in restricted districts of South India.

MATERIAL AND METHODS

The whole Data was collected, compiled, contrasted and regression-analyzed from various Ayurvedic literatures. Millets have been consumed in India for centuries. *Trina dhanya* (Millets) are encouraged to be grown for a variety of reasons, including their high nutritional value and therapeutic qualities.

Shashtik Dhanya -- Millet has a Short growing season of about 60 days. Because of the yield in sixty days, *Acharya Charak* named it *Shashtik Dhanya*. So, that's why it is easy to grow in more quality or takes minimum time.

Nutrition -- Millets are primarily rich in dietary fiber, micronutrients, and B-complex vitamins. Their high fiber content, along with the presence of antinutritional factors such as phytates and tannins, impacts mineral bioavailability. Additionally, millets act as antioxidants, immunomodulators, detoxifying agents, and other anti-aging agents, fighting against age-related degenerative illnesses, including cardiovascular disease (CVD), diabetes, and cancer.

Millets are harmless for those with celiac disease and gluten allergies because they are no glutinous or gluten free diet materials.

List of millets in *Charak Samhita* [6] *Gavedhuka* - Adlay millet

- *Shyamak* - Barnyard millet
- *Nartaki* - Finger millet
- *Neevara- Udika*, wild variety of rice
- *Koradusha* (Kodrava) - Kodo millet
- *Cheenaka* - Proso millet
- *Kangu (Priyangu)* - Foxtail millet
- *Yavanaal* – Sorghum

The *Bhavprakash Nighantu* contains a detailed description of *Ksudra dhanyam* (Millets), which are also known by synonyms such as *Kudradhanyam, Kudhanyam*, and *Trina dhanya* [7]

***Gavedhuka* – Adlay millet**

Coix lachryma* – *poaceae* *family. Also known as job's tear.

Gavedhuka and *Gavedu* are the two names used by wise.

Figure 1: An image of Adlay millet

<u>*Bhavprakash*</u> *गवेधु: कटुका स्वाद्वि काश्यर्कृत् कफनाशिनि* | [8]

Gavedhuka is having *katu* (pungent) and *swadu* (sweet) *rasa*, causes *karsya*(ematiation) and mitigates *Kapha*.

<u>*Charak Samhita chikitsa sthan*</u>

गवेधुकामुलजलं–Best in *छर्दि* (vomiting) and *तृष्णा* (thirst) *(च.चि.२०/३१)* [9]

कष्टार्तव (dysmenorrhea) (*मूल*) and *शुक्ररोधज मूत्रकृछ* (urinary disorder) it is very beneficial in these disease (च.चि.३०/७१) [10]

<u>*vanaspati aushadh vigyan (Rameshkumar bhutya)*</u> [11]

मूत्रकृछ (dysuria) and *मेदहर* (reduce fat)

In *मेदस्विता* (obesity) use roti of *Gavedhuka* flour or else can use fried *Gavedhuka* mixed with *yavagu* and *Madhu* (Honey).

***Shyamak* - Barnyard millet**

***Echinochloa frumentacea* Linn**. **–Poaceae** family

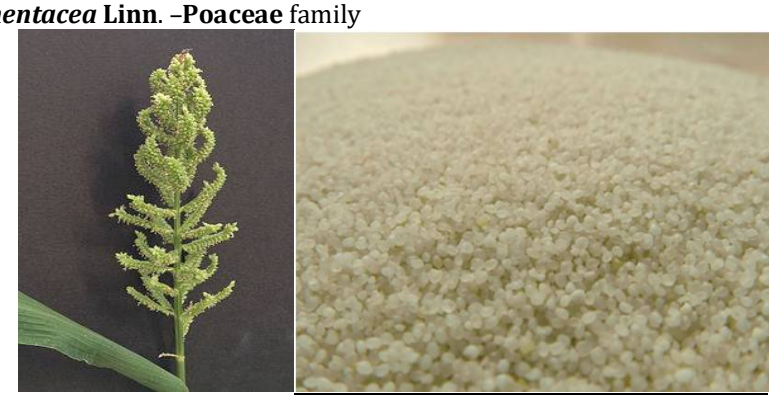

Figure 2: An image of Barnyard millet

<u>*Bhavprakash*</u> *श्यामक: शोषणो रूक्षो वातलः कफपित्तह्यत्* ||७९|| [12]

Syamaka causes *Sosana* (evaporation of moisture), *Ruksha* (dry in nature) *Guna, Vata karaka*, alleviates *Kapha* and *Pitta*.

<u>Ashtanga Hridaya</u> *श्यामक: हिमं लघु तृणधान्यं पवनकृल्लेखनं कफपित्तह्यत्* | [13]

Shyamak is *shita* (cold potency), *Laghu*(light), *vat karaka*, *Lekhanakar* (scrapping property) and *Kapha pitta nashak.*

रूक्षण in *उरुस्तम्भ* (stiffness of thighs) , *जलोदर*(ascites), *स्नेहव्यापद* (complications of snehana) and *मेदोरोग*–*Shyamak* is very beneficial . [14]

(अ.ह.चि. २१/८५- १५/११८) (अ.ह.सू. १६/३४ –१४/२१)

<u>*Ashtang sangrah*</u> *श्यामककफपित्तहर रक्षा: कषाय मधुरा हिमा:* |

वातलाबद्ध विण मुत्रा लघवोलेखनात्मका ||*(अ.सं.७/१२-१५)* [15]

Kapha-pitta hara, non-unctuous, *Kashaya* (astringent) and *Madhur* (sweet) in taste, *hima* (cold in potency), increase *Vata*, *baddha vin mutra* (bind urine and faeces), *Laghu* (easily digestible) and *Lekhana* (scarifying).

***Nartaki* - Finger millet (*Ragi*)**


Figure 3: An image of Finger Millet

नर्तकस्तुवरस्तिको मधुर स्तर्पणो लघुः |

बल्यः शीतः पित्तहरस्त्रिदोषशमनीमतः ||

रक्तदोषहरस्चैव मुनिभिः पूर्वभीरितः |(Nighantu Ratnakar)

Nartaki or *ragi* is *Laghu* (light to digest) in *Guna*, *Kashaya*(astringent)-*tikta*(bitter) *Madhura*(sweet) *rasatmak*, *shita* (cold in potency) *virya*, *truptikaraka*, *tridosha shamaka*, especially *pitta shamaka*.

The wine prepared finger millet (RAGI) is heavy to digest, causes bloating and aggravates *Kapha Dosha* [16].

***Neevara*- wild variety of rice**

***Hygroryza aristata* Nees – poaceae** family

Bhavprakash *निवारः शीतलो ग्राहि पितघ्नः कफवातकृत् || ८६|| (17)*

Shita virya, *grahi, Pittaghna*, increases *Kapha* and *Vata Dosha.*

Ashtang Hridaya

निवारः हिमं लघु तृणधान्यं पवनकृल्लेखनं कफपित्तह्यत || (18)

Nivar is *shita*, *Laghu*, *Vatakaraka*, *Lekhana* and *Kapha-pitta nashak*.

Figure 4: An image of wild variety of rice

Ashtang sangraha *निवारः श्लेष्मवर्धक || १७|| [19]*

Same as *Shyamak* which increases *Kapha Dosha*.

DravyaGuna vigyan part3 *pathya* in *ग्रहणि, रक्तपित्त* etc.

कास-श्वास, उरुस्तम्भ, स्वरभेद

उडीका कोद्रवस्चैव हस्तिश्यामकचानकौ

पीनस श्वास कासोरुस्तम्भ कण्ठगदान जयेत्|| (रा.व.)

***Koradusha* (*Kodrava*) - Kodo millet**
***Paspalum scrobiculatum* Linn. – Poaceae** family

Figure 5: An image of Kodo Millet

The synonyms are *Kodrava, Uddalak*, and *Vanakodrava*.

Bhavprakash *कोद्रवो वातलोग्राहि हिम: पित्तकफापह:* ||८०||[20]

Increases *Vata*, *grahi*, *Sita virya*, decreases *pitta* and *Kapha*.

Ashtang Hridaya *कोद्रव हिमं लघु तृणधान्यं पवनकृल्लेखनं कफपित्तह्यत* || [21]

shita, *Laghu*, vat karaka, Lekhana and *Kapha*-pitta nashak.

Ashtang sangraha *प्रियङ्गु* (known as Kodrava acc. To *ashtanga sangraha*)

भग्नसंधानकृतं प्रियङ्गु बृहणि गुरु: |[22]

Specially helps in the unification of broken parts (fracture of bones) makes the body stout and hard to digest.

DravyaGuna vigyan

शारङ्गधर -- *'विकासि'Guna*

अ.ह्र.सू ६/१३ – कोरदुष: परं ग्राहि स्पर्शशीतो विषापह: |[23]

प्रमेह, मेदोरोग, उरुस्तम्भ and *रक्तपित्त* in these all disease Kodrava is describes as *pathya ahar*. [24]

Dravya Guna vigyan (part-4)

Kodrava is *निषिद्ध* in *yagna* use. [25]

***Cheenaka* - Proso millet/ Indian millet**
***Panicum miliaceum* Linn. – Poaceae** family

Figure 6: An image of Proso Millet

Bhavprakash *चीनाक कङ्गुभेदोअस्ति स ज्ञेय: कन्गुवद् गुणै:* || ७८ || [26]

Properties are similar to *Kangu*.

Ashtang sangrah *चीन स्वादुरम्ल विपाको अन्यो व्रीहिः पित्तकरो गुरु* |[27]

China variety of rice are sweet in taste and *amla* (sour) in *Vipaka*, increases *pitta* and hard to digest.

***Kangu (Priyangu)* - Foxtail millet**
***Setaria italica* – poaceae** family

Figure 7: An image of Foxtail millet

Bhavprakash कृष्णा, रक्ता, सिता तथा पित्ताचतुर्विधा कङ्गुस्तासां पीत्ता वरा स्मृता |
कङ्गुस्तु भग्नसंधानवातकृद् बृंहणी गुरुः |
रूक्षा श्लेष्महराऽतीव वाजिना गुणकृद् भृशम् || ७७ || [28]

Kangu and *Priyangu* are two names or synonyms. *Kangu* can be classified into four types:
1. *Krsna* 2. *Rakta* 3. *Sita* 4. *Pita, pita* kind is best among them.
The properties are *bhagna sandhankar, Vata karaka, brumhana, guru* and *Ruksha*. Alleviates *Kapha* greatly. It is beneficial to *vaji* or horse.
Sushruta it is used in व्रनरोपण*churna* and tail preparation (सू.सू.३७/२५.२६) [29]
Its oil is prescribed for *Pandu Karana* (सू.चि.३१/५) [30]

***Yavanaal* – Sorghum**
***Sorghum vulgare* Linn. – poaceae** family

Figure 8: An image of Sorghum Millet

Bhavprakash यवनालो हिमः स्वादुलोर्हितः श्लेष्मपितजित् |
अहृष्यस्तुवरो रुक्षः क्लेदकृतपितो लघुः ||८७ ||[31]

It is *shita virya*, *Madhura*, and *Kashaya rasa*, *Ruksha* and *Laghu Guna*, *avrushya* (non-aphrodisiac), mitigates *Kapha* and *pitta*. *Swedakruta* (increases of moisture).
Ashtang Hridaya मेदोअनिल श्लेष्मनाशनं सर्वमिष्यते |
कुलत्थ जूर्णश्यामक यव मुद्ग मद्धु कम् || *(अ.हृ. १४/२१)* [32]

Yavnaal or *juvaar* is used for *karshan* in *Shaula* disease.

DISCUSSION

Ayurveda gives immense importance to the diet of both the healthy and diseased. Ayurveda considers the entire human body as a product of food. Ayurvedic theories hold that a person's physical, temperamental, and mental states are all influenced by the food they eat. According to Ayurveda, the first and most important pillar of life is food. A healthy diet should be considered as it is necessary for excellent health and normal body functions [33]. Ayurveda Classics mention varied ranges of *Pathya Kalpana,* which are food preparations that can expand the scope for appropriate utilization of millets, tailored to the patient's specific condition. Millets are recommended based on the individual's *Agni Bala* (digestive capacity) as they are *Laghu* and *Ruksha* with higher amounts of dietary fiber, making them a suitable choice for gradually increasing conditions such as Obesity and Diabetes mellitus in adults. *Shyamak* or barnyard millet is the preferred treatment for over-nourishment disorders as described in Ayurvedic classics, and it has been traditionally used for ages. Ayurvedic texts state, *'कार्श्यमेव वरं स्थौल्यात्'* (Being thin is preferable to being obese), and the *Laghu*, *Lekhaniya* property of millets, along with their low glycemic content and the

added benefit of long-term satiety, make them an excellent choice as high-energy nutritional food for a healthy life. It is evident from a comprehensive review of the *Rasa*, *Guna*, *Virya*, and *Vipaka* of *Trina Dhanya* (Millets) that they are beneficial for treating *Kapha*j, *pittaj*, *Raktaj* and *Medojanya* disease. Due to its *Ruksha Guna*, it significantly raises *Vata*. When compared to traditional foods, millets have a nutritional value that is not in the least inferior. *Acharya charak* mentioned in *Atistholya* (obesity) management diet and drinks that alleviate *Vata* and reduce *Kapha Dosha* and *Meda* (fat), intake of *Priyangu* (*Callicarpa microphylla*), *Shyamak* (*Echinochloa frumentacea* Linn.), *Yavaka* (Small variety of barley) as food. [34]

Table 1: Proximate Composition and Dietary Fiber (per 100 g) [33]

Millets and Cereals	Moisture (g)	Protein (g)	Total Fat (g)	Dietary Fiber (g)			Carbohydrates (g)	Energy (kJ)
				Total	Insoluble	Soluble		
Bajra (*Pennisetum typhoideum*)	08.97 ± 0.60	10.96 ± 0.26	5.43 ± 0.64	11.49 ± 0.62	9.14 ± 0.58	2.34 ± 0.42	61.78 ± 0.85	1456 ± 18
Sorghum (*Sorghum vulgare*)	09.01 ± 0.77	09.97 ± 0.43	1.73± 0.31	10.22± 0.49	8.49 ± 0.40	1.73 ± 0.40	67.68 ± 1.03	1398 ±13
Ragi (*Eleusine coracana*)	10.89 ± 0.61	07.16 ± 0.63	1.92 ± 0.14	11.18 ± 1.14	9.51 ± 0.65	1.67 ± 0.55	66.82 ± 0.73	1342 ±10
Little Millet (*Panicum miliare*)	14.23 ± 0.45	08.92± 1.09	2.55± 0.13	06.39 ± 0.60	5.45 ± 0.48	2.27 ± 0.52	65.55 ± 1.29	1449 ±19
Kodo Millet (*Setaria italica*)	14.23 ± 0.45	08.92± 1.09	2.55± 0.13	06.39 ± 0.60	4.29 ± 0.82	2.11 ± 0.34	66.19 ± 1.19	1388 ±10
Foxtail Millet *	-	12.30	4.30	-	-	-	60.09	331
Barnyard Millet*	-	06.20	2.20	-	-	-	65.55	307
Proso Millet*	-	12.50	1.10	-	-	-	70.04	341

Table 2: Millet with its properties and benefits in different disease

Millet's name	Properties of Millet	In which disease it can be used
Gavedhuka	*katu rasa*, mitigates *Kapha*	Weight loss, *Kapha*j *kas* (wet cough), *Prameha* (Diabetes mellites)
Shyamak	*Ruksha Guna*, *Vata karaka*, alleviates *Kapha* and *Pitta*.	*Kapha*j *kas* (wet cough), *amlapitta* (acidity), *vidagdhajirna* (Anorexia), *mukhdushika* (pimples)
Nartaki	*Laghu*, *Kashaya-tikta-Madhura*, *shita*, *pitta shamaka*.	*Amlapitta*, *pitta kaas*, *vidaah*, *shitpita*(urticaria), *kamala*
Neevara	*Shita*, *grahi*, *pittaghna*, increases *Kapha* and *Vata*	*Pittaj Atisara*, *Grahani*, *swarbheda*, *pittaj arsha*
Koradusha (Kodrava)	*shita*, *Laghu*, *vat karaka*, *Lekhana* and *Kapha-pitta nashak*.	Obesity (over weight), *Prameha* (diabetes mellites), *kasa*, *amalaka*, *antardaah*
Cheenaka	sweet in taste and *amla Vipaka*, increases *pitta*	*Kapha*j *kasa*, *Grahani*, *Ajirna*,
Kangu (Priyangu)	*Vata karaka*, *brumhana*, *guru* and *Ruksha*. Alleviates *Kapha*, *bhagna sandhankar*	*Bhagna, Abhighat, vidradhi, alasya, maladhikya, mukha madhurya, staimitya*
Yavanaal	*shita*, *Madhura*, *Kashaya*, *Ruksha* and *Laghu*, mitigates *Kapha* and *pitta*. *Swedakruta*	*Swedabadha*, *Grahani*, *visarpa*, *shitpita*, *mukhstrava*, *apakti*, *Atistholya*.

CONCLUSION

a critical analysis of the curative properties of millets, as mentioned in *Ayurvedic Samhitas,* reveals their significant therapeutic potential in treating various diseases. Despite the emphasis on traditional foods, millets showcase a nutritional profile that is on par, if not superior, to other dietary options. Their high dietary fiber content and low glycemic index make them a suitable choice for managing conditions like Obesity and Diabetes mellitus in adults. The Ayurvedic texts' endorsement of millets as a valuable treatment option for specific ailments reinforces their importance as a therapeutic food choice. However, it is essential to consider an individual's *Agni Bala* (digestive capacity) when prescribing millets, as their impact can vary based on the patient's constitution. Overall, the curative properties of millets highlighted

in *Ayurvedic Samhitas* make them a promising component in holistic health practices and warrant further exploration and integration into modern dietary and therapeutic approaches.

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