

Antidiabetic activities of Yava (Barley) based diet through the literature survey of Ayurvedic texts

ABSTRACT:

In the present era, people are turning towards modernization and comfort. They adopt faulty dietary habits along with a sedentary lifestyles impair individual health, and manifest plenty of lifestyle disorders. Diabetes Mellitus is one among them. Diabetes Mellitus has significant effects on an individual's quality of life as well as life expectancy. Diabetes Mellitus becomes a critical etiological factor for other life-threatening clinical entities. The treatment for this entity through modern medical sciences involves multi-drug regimens; they might be associated with various side effects. Here *Nidāna parivarjana* and lifestyle modifications can play a crucial role in the management of Diabetes Mellitus type 2. *Tṛṇadhānya* (millets) involved in the routine diet as a staple diet has a tremendous effect on these kinds of Lifestyle disorders. There are scattered descriptions regarding *Tṛṇadhānya* has found in *Bṛhat trayī*, and the individual chapter is found in different *Nighaṅtu* along with their *Guṇa* (properties) and *Karma* (functions). Most of the *Tṛṇa dhānyas* have *Rukṣa* (dry), *Laghu* (light) *guṇa* (properties), *Kaṭu vipāka* and *Uṣṇa virya* (hot potency) which will help in mitigating the *Medodhātu* (fat) and *Kapha doṣa*. the excesses of these in the body might result in the manifestation of lifestyle disorders, including Diabetes mellitus type 2, Obesity, Coronary artery disease, Hypertension, Infertility etc. *Āyurveda* can manage the Diabetes Mellitus type 2 in a better way through modification in *Āhāra* (Diet) – *Vihāra* (Lifestyle) and *Nidānaparivarjana* (omit the causative factors). The utilities of the *Tṛṇa dhānya* as a preventive and curative aspect in lifestyle disorders with special reference to to Diabetes Mellitus type 2, are trying to explore in this article. We have attempted to uncover some facts regarding *Tṛṇa dhānya* written in *Samhitā* and *Samgraha granth*, which have never been noticed yet.

Keywords: Lifestyle disorders, *Tṛṇadhānya*, *Yava*, Diabetes Mellitus, Obesity,

INTRODUCTION:

With over about 41 million diabetics, India has become diabetes-capital of the world.¹ Between 2000 and 2019, there was a 3% increase in diabetes mortality rates by age.² The rising burden of Diabetes mellitus type 2 is a major concern in healthcare worldwide.³ Diabetes Mellitus type 2 is one of the most crucial metabolic disorders characterized by Hyperglycemia and impaired Insulin secretion.⁴ Its progression is followed by Diabetic keto acidosis (DKA), and also associated with a number of complications like Retinopathy, Nephropathy, Neuropathy, Peripheral vascular insufficiencies that can result in limb amputation and most critical complication is Diabetic coma.⁵ Type 2 diabetes is often preventable. Factors that contribute to developing type 2 diabetes include being overweight, not getting enough exercise, and genetics.⁶ Dietary management in Diabetes Mellitus type 2 has always been amongst the key strategies. Around 2800 years ago, the ancient physician, *Caraka* had identified barley as a low glycemic-dietary substitute for diabetes patients. He also advocated the different invigorating agents like honey, triphala and vinegar for use with barley-based diet and drink.⁷ *Ācārya Suśruta* emphasized the importance of *Nidāna parivarjana* and *Vyāyāma* (exercises) in patients

of *Prameha* and *Sthaulya*, as well as for maintaining the homeostasis in *Doṣa* (bodily humors) for healthy living.⁸ *Tṛṇadhānya* are described in *Bṛhat trayī* under the *Dhānyavarga* and as individual chapter is found in different *Nighaṅtu*. Wheat and Rice are recognized as Staple diet in India. Both increase *Kapha doṣa* and *Medo dhātu* which lead to Diabetes Mellitus type 2, Obesity etc, like lifestyle disorders. Wheat is high in sodium which might be cause Hypertension. Here these both are altered with *Tṛṇa dhānya* with special reference to *Yava*, which will help to prevent and manage lifestyle disorders, especially Diabetes Mellitus type 2 and Obesity.

AIM & OBJECTIVE:

1. To conceptualize the knowledge regarding *Tṛṇadhānya* (Millets)
2. To understand the utilities of *Yava* and (Millets) in Diabetes Mellitus type 2

MATERIAL & METHOD:

This study is based on the literature review. Material has been collected from Ayurvedic texts e.g. *Caraka saṁhitā*, *Suśruta saṁhitā*, *Aṣṭāṅga hṛdaya*, *Bhāvaprakāśa nighaṅtu*, *Dravyaguṇa Vijñāna*, *Rāj nighaṅtu*, *Kaideva nighaṅtu* with different commentaries, Research articles, Modern texts and National research databases.

RESULT:

Yava:

Samśodhanaṁ nārhati yah pramehī tasya kriyā samśamanī prayojyaa | (Ca.Ci. 6/18)

*Saṣaṣṭikam syāt **trṇadhānyam annam yavapradhānastu bhavet pramehī*** | (Ca.Ci. 6/21)

*Yavah **kaṣāya** madhura suśītalah **pramehajita tikta** kaphāpahārahah* | - (Raj nighaṅtu – Śālyādivarga)

*Yavah **kaṣāyo** madhuro himaśca **kaṭu vipāke** kaphapittahāṅgā* ||

*vraṇeṣu pathyastilavat ca nityam **prabaddhamūtro** bahuvātavarcāh* |

*sthairyā agni medhā **balavarṇakṛcca** sapicchilah **sthūlavilekhanaśca** ||*

*mehāpaha **trṣamano atirukṣah** prasādanah **Ṣoṇitapittayośca** | - (Śoḍhala nighaṅtu)*

Table 1: Rasa Pañcaka of Yava⁹

Rasa	<i>Kaṣāya- Tikta- Madhura</i>
Vipāka	<i>Kaṭu</i>
Vīrya	<i>Śīta</i>
Guṇa	<i>Laghu, Rukṣa</i>
Prabhāva	<i>Pramehajita</i>

DISCUSSION:

As per *Ayurveda*, *Yava* has a tremendous effect found in *Prameha* and its *Upadrava*. *Yava's* properties and its functions are as follow:

Table 2. *Yava's* properties and its functions

<i>Yava's Guṇa- karma</i>	Utility in Diabetes Mellitus
<i>Yavapradhānastu bhavet pramehī</i>	As per <i>Ācārya Caraka</i> , <i>Yava</i> use as a staple diet is best advisable in Diabetes Mellitus type 2
<i>Pramehajita</i>	Cure Diabetes Mellitus
<i>Tikta, Kaṣāya rasa & Kaṭu vipāka</i>	These <i>guṇas</i> help to reduce excess <i>Kapha doṣa</i> and <i>Medo dhātu</i> which are culprit for Diabetes mellitus type 2
<i>Kaphāpahāraka</i>	These <i>karma</i> help to reduce excess <i>Kapha doṣa</i> which are important humor for Diabetes mellitus type 2
<i>Prabaddhamūtro</i>	Help in control excessive urination (Polyuria) which is chief clinical feature seen in Diabetes mellitus
<i>Tṛṣṭamano</i>	Help in mitigate excessive thirst (Polydipsia) which is aslso inculcated as chief symptoms of Diabetes mellitus
<i>Hima, suśīta</i>	This <i>guṇa</i> is help to reduce <i>hastapādāladāha</i> (burning sensation in palm and sole) which is frequently seen in Diabetes mellitus type 2 as a complications

<i>Vraṇeṣu pathya</i>	Beneficial in <i>Madhumehanīta duṣṭa vraṇa</i> (Diabetic non healing ulcers)
<i>Balavarṇakṛcca</i>	Enhance Strength and Complexion which are usually impaired in Diabetes mellitus type 2 due to impaired utilization of Blood glucose
<i>Sthairya</i>	Help in reduce <i>Dhātu śhaithilya</i> and <i>Abaddha meda</i> which is beneficial in Diabetes mellitus type 2 as well as in Obesity
<i>Sthūlavilekhana</i>	Reduce Obesity and it is already proved that Obesity is a prime etiological factor for Diabetes mellitus type 2
<i>Mehāpaha</i>	Reduce lipids and fat which will cause Obesity and increases <i>Abaddha meda</i> in Diabetes mellitus
<i>Atirukṣa</i>	Dried up <i>Abaddha meda</i> , <i>Kapha</i> which help to prevent as well manage the Diabetes and Obesity

Ācārya Suśruta mentioned that there are 2 types of *Pramehī*- 1. *Sahaja* and 2. *Apathyanimmitaja*. *Apathyanimmitaja Pramehī* is also recognized as *Sthūla Pramehī* its simply mean that unhealthy food habit in terms of excess carbohydrate and sugary food items increases *Kapha doṣa* and *Meda dhātu* result in manifestation of Diabetes Mellitus and Obesity. In all over India, Wheat (*Triticum sativum*) and Rice (*Oryza Sativa*) are used in routine diet as staple food. These both are used in the forms of Chapati, Parathas, Pudla, Dal-rice, Idli, Dhosa, Vada etc.

Yava (barley) is a functional food and one of the ancient cultivated cereal grains in the world.¹⁰ Yava (*Hordeum vulgare*) is the world's fourth most important cereal crop after Wheat, Rice and maize.¹¹ It is readily available at a reasonable cost. It has the highest amount of dietary fibre with less gluten among all cereals, which is beneficial in Diabetes mellitus, Obesity, Dyslipidemia like, lifestyle disorders etc.¹² Wheat (*Triticum sativum*)¹³ and Rice (*Oryza Sativa*)¹⁴ have high Glycemic index (GI) and Glycemic load (GL) e.g. Wheat has 73 GI and 10 GL¹⁵, and Rice has a range between 48-92 (average 70) GI¹⁶. Compared to them, Yava (Barley) has a very low GI (28 GI), which significantly lowers blood sugar. Yava has high-β-glucan, which decreases postprandial insulin hypersecretion, which may contribute to further prevention of Diabetes Mellitus type 2 and other metabolic syndrome, and improvement of insulin sensitivity with prolonged ingestion.¹⁷ Yava flour can utilize in the forms of Chapati, Bread, Sattu; use whole Yava in the form of Khichadi and Gruel.

CONCLUSION:

This is a conceptual article, the knowledge we gain from the study can be helpful in clinical practice. Analyzing the general qualities and effects of *Yava* (Barley) explores an obvious idea that *Yava* is best advised in *Prameha* (Diabetes mellitus), *Sthaulya* (Obesity) and *Medoroga* (dyslipidemia). Apart from all the *gunas*, *Yava* is very dry in nature; always prepare food by adding any healthy *Snigdha dravya* e.g. *Tila taila* (Sesam oil) or *Go ghrta* (Cow butter). *Tila taila* or *Go ghrta* considered a healthy fat for lifestyle disorders, can use in Diabetes mellitus.

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